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ORIGINAL ARTICLES.

THE RECOGNITION AND TREATMENT OF PANCREATIC INFLAMMATION.[1]

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No surgical field has been so much neglected as that of pancreatic diseases, and up to the present only a sporadic interest is shown in it.

This deplorable fact reflects the whole history of the pancreas, which was probably known to Hippocrates, but certainly not understood by our great ancestor, as is evident from his essay Περὶ ἀδένων. Hippocrates assuming that all glands of the body consisted of κρέας (flesh), it is not astonishing that this gland was given the term Πάγκρεας (all flesh). Eudemus, in the fourth century, advanced the theory that the pancreas discharged a saliva-like fluid, which served the purpose of digestion, but Herophilus and Galen denied this assumption, claiming that the pancreas simply served as a kind of support for the stomach and the large blood-vessels. For centuries thenceforward no interest was taken in this gland; but in 1642 Georg Wirsüng [not Wirsung], the German demonstrator at the anatomical institute of Padua, in Italy, recognized the duct of the pancreas which still bears his name. More than a hundred years later Santorini detected the second duct.

The discovery of the ferments of the pancreatic gland by Claude Bernard in 1855 revived the scientific interest in this important organ, and the conjoined investigations of physiologists like Schiff, Bidder, Pawlow, Heidenhain, of pathologists like Cruveilhier, Rokitansky, Virchow, Recklinghausen, Klebs, Orth, Ziegler, Langerhans and Dieckhoff, and of clinicians like Friedreich, Frerichs, von Mering and Minkowski gave us an insight in its functions and their disturbances. Especially the discovery of the latter authors, that diabetes followed the extirpation of the pancreas in lower animals (1889), and furthermore the brilliant development of abdominal surgery, led to a better understanding of the physiological, anatomical and clinical features of the organ. The classical contributions of Gussenbauer, who was the first to operate on the pancreas, of Körte, Oser, Hahn, Senn, Robson, Moynihan, Flexner, Halsted, Mayo and Woolsey have also helped to establish the physiology as well as the surgery of the organ upon a new basis.

To appreciate the diseases of the pancreas the anatomy as well as the topography must be thoroughly known. In order to recapitulate the important anatomical points it should be remembered that the pancreas is an elongated gland, situated behind the stomach on a level with the twelfth dorsal or the first lumbar vertebra, where it crosses the aortic foramen of the diaphragm. Its length is five to seven inches, and its weight about two to two and one-half ounces.

The organ is divided into the head, the body and the tail. The hammer-shaped head is situated in the concavity of the duodenal loop on the right of the spinal column, and is deeper located than the other parts of the gland. At its posterior surface the ductus choledochus communis passes down in a groove—sometimes in a canal. Anteriorly it comes into contact with the flexura coli hepatica, and posteriorly is strikes the vena cava ascendens.

The body is separated from the left crus of the diaphragm by the left suprarenal capsule and from the right by the vena cava ascendens. The posterior surface rests on the aorta descendens and the lymph-vessels accompanying it, and the inferior surface rests on the duodenojejunal flexure. It is furthermore situated between the branching off of the truncus coeliacus and the arteria mesentica superior. From the arteria coeliaca the splenic, hepatic, and gastroduodenal arteries, and the ramus pancreatico-duodenalis superior branch off, while the superior mesenteric artery sends off the arteria pancreatico-duodenalis inferior. All these arteries send branches to the adjacent organs.

Below the body is found the solar plexus and the lymph-vessels arising from the cisterna chyli. The tail is connected with the hilum of the spleen by the pancreatico-splenic ligament. Posteriorly it is bounded by the left kidney and anteriorly by the flexura coli lienalis. The insertion of the transverse mesocolon is found below the inferior pancreatic margin.

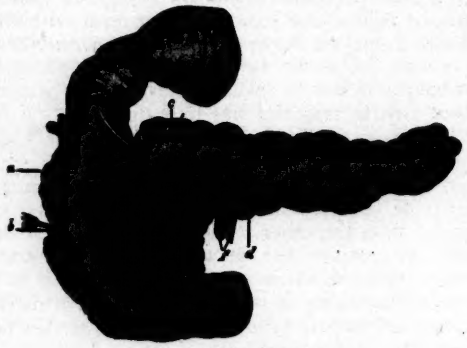
Some also distinguish a neck of the pancreas indicated by a slight inversion at the left of the head.

As mentioned above, the pancreas possesses a large and a small duct, both of which open separately into the duodenum. The large duct, called the Wirsüngian, passes straight from the tail to the head, where it alters its direction by turning downward and backward, uniting with the ductus choledochus communis, and thus forming the ampulla of Vater. An inch above the Santorinian duct opens into the duodenum after it continues forward where the Wirsüngian canal makes its turn. The wall of the Wirsüngian canal is thin and smooth; its larger diameter amounts to three millimeters. Its structure is like that of the paro-

[1] Paper read before the Annual Meeting of The American Therapeutic Society, Philadelphia, May 5, 1905.

tid gland, but its texture is looser and softer. Areolar tissue, dipping down in its interstices, so that it is divided into lobes, surrounds it. These lobes are again divided into lobules, forming a constellation of alveoli, which connect with the branches of the duct. Columnnar epithelium lines the minute ducts, while the alveoli are tubular and lined with columnar cells.

Fig. 1.



Pancreatic Ducts.

a Ostium duct, Santorini; *b* Papilla Vateri; *c* Duct, Santorini; *d* Duct, Wirsüngianus; *f* Sup. mesenteric vessels.

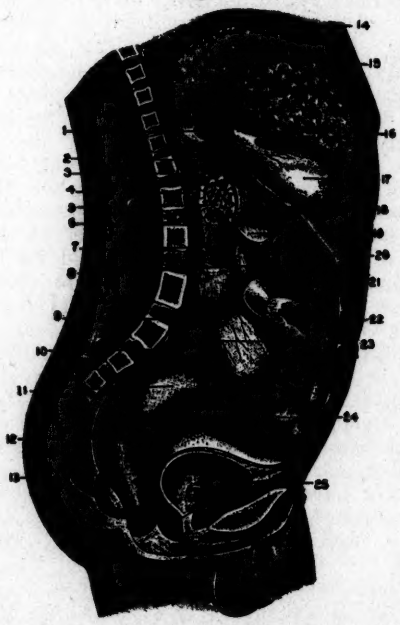
The distribution of the branches can be well studied now by the Roentgen rays (injection method). The intraalveolar tissues are filled with groups of small polygonal cells, with a round nucleus and a refractive cell body, known as the "islands of Langerhans."

The secretion of the pancreas is clear and slightly viscid. The taste is salty. Its specific gravity is 1,030 and the reaction alkaline. It contains three ferments, viz.: It emulsifies fats and splits them into fatty acids and glycerin; it changes the albuminates into peptones and influences the carbohydrates like the secretion of the salivary glands; it changes starch into dextrin, maltose and grape-sugar.

Our knowledge of the symptomatology of pancreatic diseases is still in the infantile stage. Great difficulties in an exact diagnosis are offered by the deep situation of the gland and its intimate contact with the neighboring organs, viz., the stomach, duodenum, liver and biliary tracts. Thus it is sometimes impossible to learn whether the pancreas itself or one of the neighboring organs is primarily affected. Physiology, however, frequently comes to our rescue. The specific physiological functions of the organ, described above, are disturbed as soon as the pancreas becomes diseased. Thus we may be able to make a diagnosis from the cessation of the functions, viz., the non-division of fat into fatty acids and glycerin (fat-diarrhea) and the discontinuation of the regulation of the sugar-consumption (diabetes). If, while biliary disturbances are absent, much fat is present in the feces, pancreatic disease may be suspected. The presence of sugar in the urine corroborates the diagnosis, if there are other symptoms pointing to pancreatic disease. The absence of sugar alone proves nothing against it.

The other signs of pancreatic disease are not reliable. Of course, pain is a valuable symptom, and if present in the pancreatic region may point to acute and chronic inflammation as well as to neoplasm, cyst and lithiasis. But sometimes the pain is found in the epigastrium and at other times towards the back only. Sometimes there are colicky attacks, followed by more or less grave collapse, such conditions often being mistaken for "cramps of the stomach" or colicky attacks of the biliary or intestinal sphere. Thus the character of the pain in these disorders is not so specific that it could be utilized for diagnostic purposes. Only after excluding the disorders mentioned can we regard the pain in this region as emanating from a pancreatic affection.

Fig. 2.



Topographic Relations of the Abdominal Organs to the Pancreas.

1. Foramen Winslowi.
2. Pars. horiz. duod.
3. A. renalis dex.
4. V. renalis dex.
6. A Mesent. sup.
7. Pars. adsc. duod.
8. Post. mem. of transv. mesocolon.
9. Right mem. of mesentery.
10. V. iliac comm. dex.
11. Flexura sigm.
12. Rectum.
13. Douglas' pouch.
14. Diaphragm.
15. Liver.
16. Oment. minus.
17. Interior surface of stomach.
18. Bursa omentalis.
19. Interior mem. of transv. mesocolon.
20. Colon transv.
21. Descending mem. of maj. omentum.
22. Ascending mem. of maj. omentum.
23. Both mem. of mesentery.
24. Small intestine.
25. Bladder.

The same may be said of the cachexia following pancreatic disease, since this important symptom is also found in the various affections of the stomach and the duodenum, as well as with neoplasms of liver and gall-bladder. That the stomach and intestines are more or less disturbed in pancreatic disease hardly needs to be emphasized.

But they resemble the various diseases peculiar to these organs so much that differentiation cannot be established on that basis. A more reliable distinction can be made if jaundice is present, since this symptom is nearly always observed in disease of the pancreatic head, provided it is of an inflammatory character or caused by abscess, neoplasm or fibrous degeneration. This is most natural because the common duct becomes compressed. In such cases the gall-bladder will be extremely enlarged without being tender, while the duct is obstructed by the presence of biliary calculi and becomes small and tender on touch. In other words, in chronic jaundice, complicated with considerable enlargement of the gall-bladder and not showing colicky attacks in the biliary sphere, a diseased pancreatic head should be suspected. A pancreatic calculus can be readily detected by the Roentgen method, but it is difficult to differentiate it from a biliary or renal concretion.

Palpation can be relied upon in thin individuals when the organ is enlarged by inflammatory processes or abscess-formation. In such cases it generally overlaps the small curvature of the stomach. The examination is best done while the patient is anesthetized and after the stomach and bowels have been well evacuated. But if the conditions are not very favorable, the intumescence may be taken for a tumor at the posterior surface of the stomach or in the omental bursa or the glands of omentum or mesentery. Cysts of the mesocolon or even inflamed retroperitoneal glands may be also mistaken for a diseased pancreas. By the artificial dilatation of the stomach by air or water, the organs to which the intumescence belongs can, at times, be defined. Percussion is of value only when the tumor is very large. As general causes of chronic pancreatitis syphilis, mercurial poisoning, arteriosclerosis and injuries are to be considered.

In summing up it becomes evident that there is not one sign which is absolutely pathognomonic for pancreatitis. Only by carefully considering the history, the mode of the onset and the various combinations of the different symptoms, a diagnosis can be made in a number of cases.

We distinguish three forms of pancreatitis, viz., the acute, subacute and chronic form. The classification of Fitz, who has done so much in elucidating the pathology of the pancreas, in hemorrhagic, suppurative and gangrenous pancreatitis is tempting, but not opportune, for the reason that one of these forms passes into another. In other words, it would rather indicate a variation degree or stage than a difference in kind.

The predominant symptoms of acute pancreatitis are: Sudden pain in a previously healthy individual at the upper region of the abdomen, followed by collapse and vomiting. Constipation is always present. Soon after the first symptoms the abdomen becomes distended. The urine contains sugar and sometimes albumen. Slight jaundice is frequently observed. If the patient survives the first stage, his face assumes the Hippocratic expression. The temperature is of the irregular septic character, that is now subnormal, then excessively high, while the pulse rate is extremely high, with poor quality. The tenderness and rigidity of the recti muscles makes it difficult to palpate the pancreatic intumescence without the aid of anesthesia.

In differentiating the possibility of intestinal obstruction, perforative appendicitis, perforative duodenal or gastric ulcer, ulcerative or suppurative cholecystitis and inflammation of the bile ducts must be eliminated.

The preference of acute pancreatitis is for healthy men of thirty to forty years.

It is reported by Osler and Manges that cures were effected in patients whose inflamed pancreatic glands were exposed by laparotomy and left untouched. We might safely say that in the great majority of cases the course is grave from the beginning. Those patients who survive the severe shock in such cases still succumb to necrosis of the gland or to abscess-formation, provided no effort is made to drain off the hemorrhagic effusions generally found in abundance at this stage. If it is realized that in acute pancreatitis a high degree of hyperemia is always present, which leads to hemorrhage in the tissues, the importance of early discharge of these fluids, so favorable for bacterial development, is self-evident.

In these cases, in which the process virtually starts as a hemorrhage (pancreatic apoplexy), the inflammation being the consequence of the bloody infiltration of the tissues, early surgical interference is so much more promising.

In all cases of acute pancreatitis the autopsy *in vivo* as well as *in mortuo* revealed the fat necrosis either in the gland itself or in some of the adjoining tissues. Whether this unfortunate phenomenon is the consequence or the cause of the hemorrhagic inflammation is still *sub judice*.

In the subacute form the symptoms are virtually the same but of a milder degree, the collapse especially being less sudden and less severe and sometimes entirely absent. The superior abdominal region swells less rapidly, and the nausea is less marked. The meteorism being less extensive, palpation gives better chances, so that the swollen pancreas may be well defined. The constipation is followed by diarrheic stools of a fetid odor, containing pus or blood. The pulse is not as excessively high as in the acute form and varies between 80 and 110. The morning temperature is sometimes normal, whereas in the evening the thermometer registers from 103° to 105° F. The pain localizes itself in the epigastrium. The grave symptoms may gradually disappear, while the increasing cachexia and the presence of albuminuria tell of the continuous pathological changes. Then an abscess often forms, in which case a tumor develops, projecting into the upper region of the abdomen. Sometimes it burrows into the loin or below the dia-

phragm, where it establishes itself as a subphrenic abscess. It is in just such cases that surgery promises good results. Especially, if gangrenous portions of the pancreas become imbedded in circumscribed foci, peritoneal adhesions enveloping them, free exposure and draining may be directly life-saving.

In chronic pancreatitis the inflammatory process generally starts in the ducts, bacteria invading them from the duodenum or the common duct (ascending inflammation). Sometimes the inflammation is caused by constitutional disturbances like syphilis or abuse of alcohol (hematogenous inflammation). Inflammatory induration of the pancreas is also produced by the partial or complete obstruction of the ducts by concretions, or cicatricial stricture or by tumors. Other important etiological factors are injuries of the abdomen, directed against the pancreas.

Autopsies, made in cases of syphilis, arteriosclerosis, alcoholism, interstitial hepatitis, and also in cases of diabetes, reveal a more or less extensive fibrous degeneration in the pancreas. In syphilis the signs of periarteritis are found, the adventitia being infiltrated with lymphoid cells and the capillary network disappearing around the acini.

The symptoms of chronic pancreatitis are: Gradual and painless onset, gastric disturbances, constipation or diarrhea and pain in the epigastrium. jaundice and cachexia. Albuminuria is always present and glycosuria seldom absent. The temperature is generally normal in the morning and rises to 101° to 102° F. in the evening. The pulse is usually normal, and if jaundice be present, abnormally low. At a late stage the blood-degeneration finds its expression in hemorrhages from nose and intestine. Blood may be vomited and the integument shows petechiæ. The presence of all these signs, however, does not make the diagnosis *a priori*, since they may all be observed in other chronic diseases of the gastro-intestinal tract or in cholelithiasis, carcinoma of the liver or cholecystitis.

Sometimes the thickened pancreas can be palpated. But then carcinoma will be thought of first, the contradiction, however, being furnished by the continuous or temporary decrease of the tumor in favorable cases.

The course of chronic pancreatitis is slow. In the majority of cases fibrous degeneration may gradually destroy the functions of the organ. Sometimes there are secondary changes in the adjoining tissues, like compression of the duodenum and the common duct or thrombosis of the portal vein. Such secondary conditions are especially accessible to surgical interference.

No doubt many cases of pancreatitis, not only of the chronic, but also of the acute type, could be saved by surgical interference.. Why, up to the present, this has been done only to a limited extent explains itself fully by the great difficulty of diagnosis, which makes the surgeon hesitate to risk an operation in a region, the accessibility of which is, as described above, impaired by its topographic peculiarities. He will also fear the vascularity of the organ which makes hemostasis extremely difficult. Clinical experience further shows that interference with the pancreatic parenchyma not only inhibits nutrition of the area involved, but also irritates the adjoining organs, a condition which is frequently followed by fat-necrosis. Another aggravating circumstance is the fact that the patient is generally in a state of greater or less collapse.

If, however, it is realized that acute pancreatitis is virtually an infectious process not unlike acute appendicitis, the difference being that the virulence in the inflamed pancreas is still greater, its ferments being an additional factor for the greater intensity of the toxic nature of the affection, we understand that only under extraordinary circumstances medical, or expectant treatment, rather, is successful. It is natural, therefore, that surgery has tried to approach the focus of infection with a view of discharging and draining off the infectious virulent exudates at an early stage, instead of waiting until the process concentrates itself, so to say, into an abscess. Of course, if the patient survives the acute stage, it would be most desirable to operate on a well-defined circumscribed abscess-focus, and, in fact, if we could hold the patient over till this stage is reached, such treatment would be the one *par excellence*. But how many do survive? As long as the clinical experience is so sad in this respect it seems to me that, in spite of all the difficulties presented, the surgeon should, instead of hoping for improbable developments, not hesitate to do what he used to do in all other infectious processes which his scalpel has a chance to reach.

In fact, Nimier, Robson, Lund, and especially von Mikulicz, are strongly in favor of early operation for acute pancreatitis, Nimier incising the pancreas and packing it, whereas Robson is for an incision below the umbilicus and counter-incision below the rib arch. Lund and von Mikulicz divide the gastro-hepatic ligament and drain the omental bursa extensively, and eventually expose the diaphragm after rib resection.

Referring again to the uncertainty of the symptoms, which may just as well be pathognomic for other abdominal disturbances, one factor deserves the greatest attention, viz., that these other disturbances demand laparotomy likewise. Practically, therefore, the surgeon need not fear that after having opened the abdomen he will be embarrassed by the presentation of pathological conditions which may not require surgical interference. In practice the surgeon will consequently open the abdomen whenever there are symptoms of the nature described, which would point to the possibility of the presence of pancreatic inflammation. If the intra abdominal inspection reveals the presence of fat-necrosis, pancreatic inflammation and exudation should be assumed, and if palpation verifies it the exudate must be discharged and the area drained.

The *modus operandi*, which is virtually identical with that in cholecystotomy, would therefore be the following: An incision is made alongside the outer margin of the rectus muscle. If a tumor was felt in the median line, the incision may reach from the xiphoid process to the umbilicus. If the rib arch proves to be in the way, Marwedel's method of resecting the costal arch may be advisable. The further procedures must bear an exploratory character.

At first the ducts are inspected and palpated, in order to ascertain whether there be a calculus in the Wirsüngian or the common duct, or in the papilla Vateri. In this event, extraction of the calculus must be followed by duct-drainage. If such steps are contemplated, large gauze pads must be ready to mop up the secretions as they escape. If there is a pancreatic exudation it must be discharged. During these manipulations the abdomen is frequently irrigated with hot sterile water. I regard the use of these simple means as very important in intra-abdominal operations, because, in the first place, they stop surface-hemorrhage, permitting the surgeon to see more clearly. At the same time they remove exudations and blood-clots in an easy, mechanical manner and eliminate, therefore, a favorable soil for bacterial development. The repeated hot-water irrigations, to a certain extent, also possess bactericidal properties. It is true they cannot kill bacteria directly, because they are not hot enough, but they affect bacteria in such a manner that their resistance is lowered. After the field is thoroughly cleaned, packing with three per cent. iodoform gauze is done. If the patient is in grave collapse, ether should not be given, and local anesthesia administered instead.

In the subacute, or chronic form the patient can always be given the benefit of a full general anesthesia.

If the pancreatitis is caused by pressure from cholelithiasis or cholecystitis, or both, it will often be relieved indirectly by cholecystotomy. The compression ceasing then, the hyperemic condition of the pancreas naturally disappears. If the pancreatitis be caused by retrograde infection from the gall-bladder or the common duct, the pancreatitis may also subside after cholecystotomy. If not, the pancreatic duct must also be drained.

My own experience with acute pancreatitis has not been very encouraging. Among three cases I have lost two. In none of them could an accurate diagnosis be made before the abdomen was opened. In one of the fatal cases the pancreatic focus was of a pyemic nature and developed after puerperal infection. The second developed on the basis of chronic cholecystitis, which caused infection of the pancreas. The third case was due to a severe injury sustained by a woman of thirty years, who was thrown against the projection of a strong table while wearing a heavy corset, the latter apparently having aggravated the violence. Although the patient was in considerable collapse, the hemorrhagic exudation could be well drained off, and recovery was speedy.

In a fourth case the diagnosis cholelithiasis was made by an excellent diagnostician, who requested me to open the gall-bladder. He apparently had good reasons for his assumption, because the patient, a woman of fifty-five years, had numerous colicky attacks in the region of the gall-bladder and was jaundiced repeatedly in the course of the last seven years. Lately the general condition became impaired, the loss of flesh also being marked. The urine contained no albumen, but traces of sugar. The epigastrium, as well as the region of the gall-bladder, was tender and the liver slightly enlarged. After the abdomen was opened at the outer margin of the right rectus muscle, a small, fibrous gall-bladder was found of the shape which I described in the *Deutsche Medicinalzeitung*, May 7, 1898, as "Hour-Glass Gall-bladder." It contained no liquid whatever. But there were a number of adhesions between gall-bladder, liver, omentum, duodenum and colon, covering a hard, nodular mass, which was recognized as the head of the pancreas. After dissecting the adhesions and isolating the pancreatic head as much as possible, I closed the abdomen without interfering with the gall-bladder at all. The patient made an uninterrupted recovery and has had no colicky attacks since. It seems to me that the patient suffered from cholelithiasis for a number of years, small calculi having probably been present, which, while causing cholecystitis and circumscribed peritonitis, were expelled during the numerous and violent paroxysms, leaving a much degenerated gall-bladder. In the meanwhile the peritonitic irritations had produced the adhesions which extended to the pancreatic head and obstructed the duct more or less, thereby causing retention of the pancreatic secretions.

I reserve to myself the privilege of describing these cases more fully in a future communication. All in all, I have no doubt that pancreatitis is of much more frequent occurrence than is generally assumed, and if the conjoined efforts of the family physician and the surgeon will be in the direction of more frequently suspecting pancreatitis in apparenty obscure abdominal ailments, our statistics will soon present an altogether different appearance.

Treatment of Pertussis.—In the treatment of whooping-cough, R. RAHNER (*Munch, med. Woch.*, June 20, 1905) speaks well of the action of antitussin, an ointment consisting of difluordiphenyl and fats, which is applied locally to the neck and chest. After five days the intensity and the frequency of the attacks will be much diminished. Besides being an antispasmodic, the drug is also an excellent expectorant, and more serious complications, such as bronchopneumonia, are most certainly avoided. Since it is absolutely harmless, it may be used for nurslings. Bad results were never seen, and failures occurred only in the case of infants suffering from rachitis or broncho-pneumonia.

THE CARE OF THE INFANT.[1]

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I HOPE you do not expect me to set before you this afternoon a mental feast of original ideas about the care of infants, nor to give you an exhaustive list of all that has been written upon this subject in Germany, Morocco, England and Siberia since the infancy of Cain and Abel down through the ages to the present time. For those who desire such a bibliography I refer you to the Library of the Medical Society of the County of Kings.

I fear indeed that little that I shall present to you in the forthcoming paper will be original, for the early care of infant is a subject that has received attention since the birthday of mankind. All that any one individual can do in this line is to accept at the outset the teachings of some one who has trodden the path before him, and then from time to time record the results of his own personal observation and experience. In my own case I had the singular good fortune to have as "mentor, guide and friend" a man whose exceptional mental gifts had been cultivated by the benefits of collegiate training and the medical course of the New York College of Physicians and Surgeons. His Alma Mater then sent him abroad for two years' work in the best maternity hospitals of the world, and upon his return installed him as the resident obstetrician in an institution, then in its infancy, but now a child of lusty growth, the Sloane Maternity Hospital. In the ideal environment of the Sloane, Dr. Ervin Alden Tucker lived for five years, seeing thousands of cases, regulating every minute detail in the management of mother and child, and teaching those fortunate internes who, like myself, came under his authority with that accurate knowledge, lucidity of statement, practical application of many theories, and innate enthusiasm that later during the few brief years of private practice quickly caused him to be recognized as one of the leading obstetricians in this or any other country. I was indeed fortunate to have had the benefit of this man's influence and instruction. So far as possible I still follow the directions he laid down. These directions I propose to embody in the present paper, together with such results of personal experience as time has brought me.

As a foreword let me interpolate the answer that I have formulated to the oft-repeated question of the expectant mother to the physician engaged to attend her at her approaching confinement. "What articles shall I have in readiness for the proper care of myself and of the baby?"

This question would doubtless be answered differently by every physician who has been in practice for five years. To try and secure a composite photograph of the views of different individuals I proposed this question to my class of students at the Long Island College Hospital, with the request that a written list be handed me by each student, made out after a conference, not with the text-book alone, but also with his medical preceptor. Sixty lists were handed me, containing, as a rule, a well-considered list of articles. These lists were then tabulated, duplicates were eliminated, and the resulting list was discussed with the supervisors of nurses of six of the leading hospitals in the city and with a large number of trained nurses. The idea was to secure a list of articles that should be within the reach of all save the very poor, and not to include non-essentials. The net result is as follows:

ARTICLES TO BE IN READINESS FOR AN APPROACHING CONFINEMENT.

For Use of the Mother.

Towels, freshly laundered	6
Sheets, freshly laundered	3
Rubber Sheet	1
Labor pad, made of newspapers and clean muslin or "Quilted Mattress Protector"	1
Lochial guards, preferably of gauze and paper wool, or of cotton waste, or of cotton gauze, sterilized	36
Binder, abdominal, 18 inches wide and circumference of hips	3
Binder, breast, made from pattern	2
Safety pins, "Clinton," Large No. 3	24
" " " Medium No. 2	48
" " " Small No. 1	36
Wash bowls, earthen or agate	2
Water pitcher, earthen or agate	1
Slop jar	1
Absorbent gauze for wash cloths, etc. (yards)	10
Fountain syringe, one gallon	1
Glass douche tip, for syringe	1
Glass drinking tube	1
Douche pan, white enamel or agate ware	1
Hand brushes	2
Antiseptic tablets, 7½ grains, bichloride, blue	100
Lysol, fluid ounces	8
Vaseline in a tube	1
Chloroform, Squibbs, fluid ounces	4

For Use of the Baby.[1]

Flannel bands, 6 inches wide, 30 inches long	4
Diapers	24
Woolen blanket, soft, old, and about a yard square	1
Flannel petticoats	3
Slips	4
Knitted flannel shirts	2
Bath tub, white, at least two feet long on bottom	1
Bath thermometer	1
Bath aprons, flannel and rubber	1
Hot water bag	1
Absorbent cotton (pounds)	1

1 Read before the Associated Physicians of Long Island, Manhattan State Hospital, Central Islip, L. I.

1 At time of labor room should be cleared of all needless articles and ornaments. Protect carpet with layer of newspapers with sheet tacked over them. Clear bureau, mantel and table tops, protect with papers and cover with clean towels ready for instruments, etc. Have plenty of hot and cold water and ice in readiness. Have these supplies at hand, in good order, and easily accessible.

Olive oil (sweet oil), fluid ounces	4
Castile soap	1
Baby basket to hold dressing materials, etc.	1
Baby powder (lycopodium, 3; zinc stearate, 2; Boric acid, 1;) ounces	4
Powder for cord (salicylic acid, 1; zinc oxide, 1;), ounces	1
Boric acid (pounds)	1
Salt shaker for boric acid	1
"Lightning" jar, ½ pint, for boric acid solution	1
Scissors, pin cushion, needles and thread.	

This list is printed upon the Standard Library Bureau card (6 in. x 6 in.) for medical work. On the front of the card a space is left for the name, address and telephone number of physician, patient and nurse. On the back page, after it has been folded vertically, is the special direction:

"Urine: Send half a pint of morning urine to doctor's office every two weeks after the sixth month."

This card I have now used for three years, and have heard many comments on it from the householder's point of view. I have found it, if not ideal, certainly of material use to both physician, nurse and patient. I trust the discussion here will render the list still more valuable by proposed amendments.

Let me now present for your consideration a brief personal statement of my mode of procedure in the conditions that may arise in the care of infants during the first month of life, and which primarily come under the rule of the obstetrician. Only the more common ailments will be considered; the rarer forms of infantile anomalies and pathology will be eliminated more or less completely.

Obstetric Accidents which may happen to children during or soon after birth.

In anticipation of the possible occurrence of such accidents certain preparations should always be made as soon as labor is fairly begun. A bath-tub, partially filled with hot water should always be in readiness and an abundant supply of hot water should be continuously provided. Upon a sterile towel on a table near the bedside should be arranged two pairs of artery forceps, scissors and tape for the cord, a curved needle threaded with a yard of heavy silk, tongue forceps or a small double tenaculum for seizing the baby's tongue if necessary, a plate upon which are spread a dozen thin pledgets of absorbent cotton dampened with boric acid solution, to use for the child's mouth and eyes, a gauze compress for insufflation, and a bottle of 2 per cent. nitrate of silver solution with a dropping tube for the instillation of the eyes. All the supplies appertain to the child, any one of which may be needed at an instant's notice. Have them ready beforehand.

Cleansing of the Mouth as soon as the head is born may be regarded as the first step in the actual medical care of the infant, for with the establishment of pulmonary respiration the separate existence of the new-born actually begins. The mouth should be cleansed as soon as it emerges over the perineum. The small, thin borated flakes of dampened cotton are to be used, wrapped around the tip of the little finger, and the mouth thoroughly wiped out. Proper attention to this detail may prevent asphyxia or a later foreign-body pneumonia from inhalation of blood or meconium. Several such pledgets of cotton are required and the child not infrequently makes efforts to breathe while this is being done.

Cord around the Neck. Most of our books and teachers lay great stress upon the importance of removing the cord from around the neck as soon as the child's head is born. Formerly I believed in and practised this myself, but I must say that, with greater experience, I have come to attach less and less importance to this procedure. When the child's head is born it is best to remove the cord at once if it can be quickly and easily done, as when the cord is long and loosely encircles the neck. If the least difficulty be experienced in removing the cord it is best to pay no further attention to it but proceed at once to the completion of the delivery. Less time is thus lost and time at this stage of labor is of vital importance. Recall for a moment the conditions as they exist when the cord is around the neck and you will readily see why it is not so important to remove it. If the cord be around the neck it may be assumed that all circulation through it has ceased because of the severe pressure to which it has been subjected by being between the neck and the pubic arch; the head is already born so that there is no need of reestablishing the circulation of blood and oxygen through the cord. All that is necessary is to finish the delivery so that the child is free to expand its lungs. Children are occasionally lost through the delay caused by repeated attempts to remove the cord; had but one attempt been made and, that failing, the child promptly extracted many such cases could have been revived from the asphyxia. Occasionally it is easy to slip the cord over the shoulders and allow the child to be born through the loop thus formed. There is no objection to this procedure, provided no time is lost. If the child be completely delivered with the cord still around the neck the criticism may be made that there will be undue traction upon the placenta. While traction upon the cord is usually productive of no ill results as the cord will tear loose from the placenta if strongly drawn upon, there is a certain element of risk in the premature separation of the placenta by this traction. A severe concealed hemorrhage may then result; the child's head may cork up the birth canal so effectively that the internal hemorrhage may be quite unsuspected until birth is completed, and then, to the surprise and dismay of the accoucheur a uterus filled with blood may discharge its contents immediately after the child has been removed. To prevent this possible danger it is better to have two artery

clamps always at hand. When the non-removable cord is encountered, clamp it firmly in two places, cut between and deliver the child without delay.

Asphxia.—In case a child is born asphyxiated three things are necessary, viz.: Clear the air passages from mucus, stimulate the child with heat, perform artificial respiration. If the asphyxia be deep all three of these procedures are of the utmost importance; to omit one of them may result in failure. The best method to clear the air passages of mucus is to wipe out the child's mouth and then clear out the mouth and nose by mouth to mouth insufflation through the medium of a layer of towel or surgical gauze. The very act of forcing air through the upper air passages is of itself a valuable aid to establishing respiration. During this procedure care must be taken to press with the thumb firmly upon the baby's stomach, otherwise the child may soon resemble a balloon by reason of the distension of stomach and intestines by the air forced through the esophagus.

The stimulus of heat is most easily applied by placing the child at once in a hot bath, "Have plenty of hot and cold water and ice in readiness;" this clause in the directions to the nurse should always be emphasized beforehand. The baby's bath tub should be partially filled with hot water shortly before birth, and be placed close at hand with a tea-kettle of boiling water to add heat at once when it is needed. If the application of heat to the child should be urgent, the cord can be clamped and cut, and the child placed at once in the tub. Occasionally the application of cold may be advisable and can be applied by rubbing the back or the chest of the child with a piece of ice momentarily. This will often cause the child to gasp when persistent heat has failed, although this alternation of heat and cold is not of so much imporance as the hot bath alone.

The advantages and disadvantages of the various forms of artificial respiration—Sylvester, Byrd, Schultze and others—are familiar. The method which I have personally devised and practice in all such cases is as follows: Hold the head of the child between the thumb and index finger of the right hand placed on each side of the neck, with the baby's head to the right and lying upon the back. The baby's right or further arm is then grasped well in the axilla between the index and the middle finger of the same hand; the ring and little fingers are to be extended as far down the spine as possible to give the back support. The left hand holds the legs of the child, from beneath, by grasping the thighs, and with the index finger between the thighs for better security and control. With the child held in this manner it is at once immersed in the tub of hot water, which should be of as high a temperature as can well be borne, and held so that merely the face is out of the water. Expulsion of the air from the chest is then easily effected by flexing the thighs well over on the abdomen with the left hand, making firm counter pressure upon the back with the right hand to prevent the nostrils from being depressed below the surface of the water. Inspiration is next secured by overextension of the legs, and of the neck, supporting the back with the fingers of the right hand as above described. The usual rhythm is of course maintained. While this method is not described in text-books it is to my mind easier and more effective that any of the other methods and combines at once the advantages of heat with artificial respiration. Indeed, in case of necessity mouth to mouth insufflation can also be done with the child still in the bath.

Rhythmic traction upon the tongue has recently been advocated and seems at least to give us another help in the resuscitation of these deeply asphyxiated infants. It can be applied by means of a small pair of tongue forceps which usually either crush the delicate tongue or slip off just when they are most needed; or by means of a double tenaculum which is rather awkward to manage when both hands are employed with artificial respiration. More certain and satisfactory is to pierce the tongue in the median line at the posterior angle of the raphe and pass a needle with a double strand of heavy silk. This can be knotted to form a long loop and in case of necessity can be held in the operator's teeth and used in connection with the artificial respiration already described. The presence of a competent assistant adds materially to the joys of this procedure. If the child cannot be made to breathe after the passages are cleared of mucus and with the use of artificial respiration while it is in the hot bath it is doubtful whether it is possible to revive it at all.

Atelectasis Pulmonum.—When this is complete or nearly so it is usually fatal in spite of all treatment; when it is partial much can be done to aid the child in its efforts to expand the lungs. For several hours, and sometimes for several days, the most careful watch must be kept of the child so that it cannot suffocate from the filling up of air passages with mucus which, in such cases, is always secreted in large quantities. Keeping the air-passages clear of mucus, using a rubber suction bulb or small, soft rubber ear syringe, with or without a catheter attached to it is of primary importance, but the application of heat and the proper nourishment of the child are also to be emphasized. These three are to be persisted in until all traces of obstructed respiration and circulation have disappeared. Many a child has been lost by omitting the heat or forgetting to supply proper food to maintain its strength. These children are usually much too feeble to nurse and have little or no hunger to force them to do so, as the atelectasis usually exists only during the first hours, or at the most two or three days after birth. They will, however, usually nurse readily from the bottle.

This condition must not be confounded with

broncho or catarrhal pneumonia which has often been mistaken for atelectasis. This mistake is especially easy during the first few days. This form of pneumonia is usually due to the inhalation at the time of birth of some foreign substance such as mucus, meconium, liquor amnii or milk; it is rarely due to exposure to cold. In atelectasis there is no fever and the condition exists from the time of birth, gradually growing worse in the fatal case but still without any elevation of temperature. Cyanosis is a more or less prominent symptom according to the completeness of the atelectasis and exists from the first, gradually growing less in case the lungs expand. In pneumonia the symptoms do not as a rule develop until two or three days after birth and the temperature soon becomes high. Cyanosis comes on as a later symptom and increases as the lungs fail more and more to perform their function.

Cephalhematoma.—If this be small do nothing but let the child lie upon the side opposite the tumor. If the hematoma be double or if it be very large, or if you are not sure of the care that will be taken of the child, it is safest to apply to the head a large bonnet stuffed with cotton, leaving only the face visible. Be sure that the bonnet is well padded so as to afford protection to the tumor. Thick layers of cotton held in place by the so-called "nun's cap" head bandage is a very satisfactory method of holding such a dressing in place. When the tumor is double of course the child will rest more easily upon the back, but with a well-stuffed bonnet on, it can lie with comfort and safety upon either side. The absorption of the blood is, as a rule, much more rapid than most of our books tell us. Three or four weeks will often suffice for the absorption of a very large hematoma, and I doubt if many last longer than a month. Most textbooks, on the other hand, give two to four months as the minimum time for their disappearance. A favorable prognosis can, as a rule, be safely given, and is a great comfort to anxious parents. This form of tumor and that of pseudocyesis are especially amenable to Christian science treatment. The absent treatment is especially good in such cases and results in complete recovery. In more severe cases the outcome is more doubtful. Success has been secured in some cases by a radiograph for accurate diagnosis and then a plastic surgical operation.

Hematoma of the Sternocleidomastoid Muscle is a rare condition, but is mentioned to call attention to the diagnosis. It is often confounded with wryneck. In most cases nature effects a cure unaided. Dr. Tucker once reported a case of this sort where the diagnosis had varied between tuberculous adenitis, fracture of the clavicle, ruptured ligaments of the neck and aneurism of the caroid; in spite of this array of medical acumen the child lived and fully recovered, for the small hematoma was the sum total of the lesion present. The fact that hematomata of varying size can be formed should serve as a warning not to make too strong traction upon the head or to twist it too violently when it is being born first, and not to pull too hard upon the body in the extraction of the after-coming head in pelvic presentations.

Facial Paralysis in an infant is usually due to pressure of one blade of the forceps upon the side of the face at a point where the facial nerve is compressed. The condition is usually a trivial one but it must be borne in mind that a child with such a condition cannot nurse properly, and therefore needs careful watching. If the babe cannot make proper suction, feed it with a bottle or with a spoon or even by means of gavage in more serious cases. The course of the disease is usually short and recovery in whole or in part is soon secured. The paralysis will, as a rule, entirely disappear before the end of the first month.

Fractures, especially of the arm or of the clavicle are not infrequently met with, usually in breech cases with extension of one or both arms. The injury is to be treated according to accepted surgical principles. The adhesive zinc oxide plaster may prove of especial value in these cases as the parts are small and the usual dressings are difficult to keep in place. This will, of course, necessitate the sponge bath rather than immersion in the tub.

Dislocations are due to similar causes and are treated along similar lines.

Wryneck, while most common after extraction in pelvic presentation, may also be a result of too active interference in the manipulation of the head in the usual vertex positions. When it occurs the muscle is most apt to be at fault, although the spinal accessory nerve may also be involved in the forceps cases due to badly applied instruments. The prognosis is as a rule favorable.

Birth Palsy, too, is especially apt to follow long-continued extension of the arm in pelvic presentations, or badly directed efforts to bring down the imprisoned arm. One or more branches of the brachial plexus are compressed between the clavicle and the first rib and a paralysis of the type described by Duchenne or by Erb results. Here too, the prognosis is fair, though the pressure being of considerable duration, the function of the nerve is not restored as soon as in the facial paralysis above mentioned. Massage and electricity are of value to maintain good nutrition and to allay the anxiety of the parents.

In the more serious forms of surgical injury such as rupture of viscera, surgical skill is usually unavailing.

The *rupture* of an *artery* in the brain or in the meninges in children where much force is required in the extraction is to be borne in mind as a possibility, although the first indication of such an occurrence may be the sudden death of the child some hours after delivery. This was my own experience in the case of a child weigh-

ing 13½ pounds, removed by version in a primipara in case of sudden collapse and surgical shock. The mother recovered, but the child was found dead in its crib by the nurse twelve hours after birth. An autopsy revealed a rupture of the middle meningeal artery.

Hygiene of the Infant.—Immediately after the birth of the child and as soon as respiration has been definitely established, certain duties devolve upon the physician as a matter of habitual routine that may properly be classified under this heading. It is, unfortunately, the custom of some members of our profession to delegate many of these details to the nurse, but it is far better to devote the "physician's hour" to attending personally to these details, and often in this way escape subsequent criticism for some supposed oversight.

Cord and Navel.—Many methods have been devised for the primary treatment of the cord. If at the time of birth it has been hurriedly tied it is better to re-ligate it about an inch from the body, using sterile linen bobbin one-eighth of an inch wide. If the narrower bobbin be used it is apt to cut through the tissues when tightly tied. Unless the cord is unusually large the stripping, the cord of jelly is a needless task.

In the obstetrician's bag there should be carried a roll containing the primary dressing complete. This is composed of about a dozen layers of surgical gauze, two inches square, and cut through to the middle on one side of the square. This is rolled in a flannel band six inches wide and thirty inches long. The roll is wrapped in a couple of layers of gauze and the whole roll sterilized.

Of the many dressings that have been advocated for the cord I personally use one made of equal parts of oxide of zinc and salicylic acid, sterilized and kept in a tight jar. Half of the small squares of gauze are applied from one side and half from the other. A liberal supply of the powder is then applied to the cord, particularly at the base; the cord is enfolded in the gauze to keep the powder in place and the whole dressing held in place by the flannel band which should be sewed, and not pinned, in place. This dressing may be allowed to remain on for a week unless soaked by bowel discharges or urine. When removed the cord will usually be found to have separated. If not, reapply the dressing for a few more days. Until the cord is off and the navel thoroughly healed the baby should not be placed in the tub for bathing, and care should be taken to keep the dressing dry. The navel, after the separation of the cord, is to be dressel with the same powder until it is healed. For granulation cases and those in which a core or stump of the cord remains behind lunar caustic may be used sparingly.

Repress any tendency to umbilical hernia by the use of a disk of sheet lead which can be depressed for a small area over the navel, and which is easily molded to the curve of the abdomen. This is to be kept in place by sewing it between the first and second layers of the belly band.

Eyes.—The instillation of one drop of 2 per cent. solution of nitrate of silver into each eye immediately after birth is still in my judgment the best preventive of septic or gonorrheal ophthalmia. The excess is easily neutralized at the time by a little salt solution. Subsequent washing out of the eyes should be made by a saturated solution of boric acid, used freely. Iced compresses are to be used in case such a purulent conjunctivitis develops, but this is practically never the case if the eyes receive proper care at the time of birth. I know that the advisability of this procedure has been questioned by physicians and even ophthalmologists do not agree at the present time as to the best solution to use. In my own practice I habitually use the Credé solution and have thus far never seen harm come from its use.

Mouth and Nose.—The mouth should next be examined to ascertain the presence or absence of tongue-tie. If this be found incise the edge of the raphe with scissors and then with the finger nail tear it back to the tongue, thus avoiding bleeding. If neglected it may seriously interfere with nursing and later with speech. Later on, before and after each nursing, the mouth should be wiped out with a pledget of cotton soaked in saturated boric acid solution. Sprue will always be avoided if this procedure be faithfully followed. Neglect of it, especially in the summer months, may lead to the establishment of the parasitic stomatitis and ultimate cholera infantum.

Be sure that the nurse knows how to blow the baby's nose. If she does not, show her how, using a few layers of gauze over the mouth and nose as in mouth to mouth insufflation. This will prevent the accumulation of mucus in the nostrils with resulting snuffles and disordered digestion from the mucus that is swallowed.

Hare lip or cleft palate should receive surgical attention as soon as the baby's vitality is sufficient to withstand an anesthetic.

Genitalia.—The genitalia should be carefully inspected to observe any malformations and to ascertain if possible whether the urethra be patent or not. Often the child will urinate soon after birth. If this does not happen it should always be ascertained at the first subsequent visit whether urine has been passed or not. Imperforate urethra will, of course, demand operative interference at once. The deformities of epispadias, hypospadias or extrophy of the bladder may be operated upon later provided the urine escapes freely. In boy babies the prepuce should be habitually retracted at once and the corona well separated from the lining of the prepuce to which it frequently adheres. This should be done whether phimosis exists or not, and if phimosis is pronounced it is better to circumcise the child at an early date. The nurse should

be instructed to retract the foreskin daily at the time of the bath, and to use a little boric acid ointment to prevent irritation. The clitoris in girls should also be freed from adhesions, in a similar manner.

Anus.—Soon after birth, or during birth, especially in breech cases, the escape of meconium indicates that the anus is patent. If this is not observed inspect the parts carefully, and be sure within the first twenty-four hours that meconium is passing in a normal manner. Imperforate anus demands prompt surgical interference.

Breasts.—During the first few weeks of life the mammary function in boys as well as girls is apt to be too free. If the breasts become swollen and tender, as they sometimes do, do not allow the mother or nurse to express the secretion, as they are prone to do, to "get the worm out of the breast" as some of the old midwives will tell you. Instead of this apply boric acid ointment, a pad of gauze and a snug breast binder and then let the breast alone.

Next should come a careful *inspection* of the child as a whole. Notice should especially be made of any birth marks, for these will surely be noticed by the family later and criticism made if they are not reported. It is one of the first inquiries of the mother in many cases. See if the baby has the proper number of fingers and toes. Congenital hernias should be searched for and a note made of them. Gross deformities such as spina bifida, and the still more unusual deformities of encephalocele or exencephalus will of course be at once noted. Their treatment fills chapters in text-books on surgery; unfortunately operative results are rarely of practical value.

Weighing.—These various matters having been attended to, and a careful inspection made, the child should be weighed accurately with the weight of the blanket and other clothes deducted, the measurements taken if such records are kept, and the nurse is then directed to oil the child with sweet oil of some kind. This is much better than vaseline which does not mix well with soap, later on when the bath is given. The infant is then wrapped warmly, a hot water bottle is placed against the abdomen, and the immediate care of the infant at birth is finished.

Nursing and Feeding during the First Few Days, i.e., until the milk comes.—It is a common mistake to have the child nurse frequently before the breasts are filled. The result of frequent nursing during the first three days is almost invariably to cause sore nipples. Then when the breasts are engorged the nipples are so sore that the mother is subjected to torture at every nursing. Caking of the breast, mastitis, and even mammary abscess may easily supervene. It is better to put the child to the breast about four times a day until the milk supply is abundant. If this infrequent nursing is insufficient to satisfy the hunger of the child it may be supplemented by a dilute modified milk or even with condensed milk. Condensed milk is usually spoken of by children specialists only to be condemned but during the first few days, while waiting for the milk to be freely supplied by the mother, it will often prove a great comfort to all the family. It must be well diluted 1-32 or 1-40, and its prolonged use is not recommended. If the child is not very hungry, sugar water will take the place of the milk, or even simple boiled water given in a small bottle with a nipple. A competent nurse can keep the child quiet and contented and save the mother much suffering by a combination of feeding and nursing during this early period. Regular hours should be insisted on from the first. Beginning about six hours after the birth, to enable the mother to get needed sleep and to rally somewhat from the shock of childbearing the child should be fed in one way or the other every three hours until the breasts are full.

Once the breasts are able to supply milk, however, artificial feeding should be stopped and regular hours for nursing established. In most households it is best to begin nursing at five o'clock in the morning and thereafter regularly every two hours, on the odd hours, until eleven o'clock at night. Breasts should be alternated at the nursings and both breasts are not to be drawn upon at any one nursing. This will give each breast four hours in which to become filled. This plan will give nurse, mother and child an uninterrupted period of six hours for needed rest. Rarely is it necessary to nurse the child once during the night. It is better to make this night feeding from the bottle so that the mother will not be disturbed. Children not fed at night digest and thrive better, and the mother supplies milk of better quality because her sleep is not broken. This in turn tends to make her milk supply last longer because the mother is not so much exhausted.

Before and after each nursing as already stated, the mouth of the child should be wiped out with boric acid solution, and here it is necessary to add a few words as to care of the nipples, for the two subjects are intimately blended, especially during nursing. The nipples, too, should be wiped off with boric acid solution before and after each nursing. The greatest prophylactic against soreness and cracking of the nipples is to keep the child from nursing too often and to have the breasts so full that the child will not tug at or chew the nipple in its eagerness to obtain food. For tender nipples use a shield or less frequent nursing. For actual cracks stop the nursing temporarily according to the depth and location of the fissure. To nipples that are naturally dry apply some emollient such as olive oil or albolene, after each nursing. If the nipples are always wet with milk or perspiration some dry powder, such as boric acid, is best applied. At the end of nursing when fissures exist, spread the fissure well apart and paint it with a tooth-pick dipped in nitrate of silver solution, forty grains to the ounce. Surround the nipple

with a small mass of absorbent cotton through the middle of which a hole is made in which the nipple rests. Dust the nipple thoroughly with boric acid, and hold the breast well up with a snug breast binder which should be worn habitually after the breasts are engorged and during the period of lactation. When the woman is up and about a well-fitted nursing corset will hold up the dependent portion of the breasts. In some cases the compound tincture of benzoin may be used and an application of gauze moistened with boiled sweet oil.

Artificial Food.—So much has been written upon the subject of modified milk that a complete discussion of this subject is entirely needless. There are many devices and several hundred sets of rules for reckoning the proper percentages of milk to be given to children in those unfortunate cases where the mother cannot or will not nurse her child. My own solution of this riddle is a simple one. I have the mother procure the sterilizer and the bottles of the so-called "Hygeia" variety—a bottle with a wide breast-like nipple and with no neck to the bottle at all. The most careless servant can hardly fail to keep these clean. For mixing the milk I use the "Materna" graduated glass. The marks upon the "Materna" are often incorrect and the percentages are not given with mathematical precision, but the error is a constant one and can easily be allowed for. Where the accurately prepared Walker-Gordon milk preparations are available the problem is an easy one, but this is not often the case. With stupid nurse girls or with inexperienced mothers the use of this definitely graduated glass is a great help in securing good results. The formula is mixed in the early morning when milk and cream are freshest; the bottles are filled and plugged with cotton, and then pasteurized and placed in the ice box and only need to be taken out, warmed, and covered with the nipple to be ready for use.

A good wet nurse may be necessary in some instances but they are very difficult to find when they are most needed. Nearly all infants can be made to thrive on milk properly modified. Oatmeal water may be used instead of plain water in cases of constipation, and if this is not sufficient the addition of a simple teaspoonful of Mellin's food to a quart of the milk mixture will often give the stools the right color and consistency. When diarrhea is present barley water is the best.

Weighing should be done once a week. The mother can easily be supplied with a weight chart such as can be obtained from the Library Bureau, and the weekly record carefully recorded. It is of great importance to the physician to have such a record kept, but it does not do to lay too much emphasis upon this to the mother. Its normal variations in her mind are apt to be given an exaggerated value and to cause much anxiety. The weight is important only when considered in connection with the general condition of the child, and the only judge of its bearing in a given case should be the physician himself.

Bathing in the tub should not be practised until the cord is off and the navel thoroughly healed. This precaution will avoid that most fatal condition, infected navel. A definite time, preferably at ten o'clock in the morning, should be chosen from the first and adhered to. The bath should terminate and the child be dressed just before it is time for the child to be fed. Children differ greatly in the manner in which they react after a bath. It is a good plan for the physician to see for himself the effects of the bath upon the child, and to advise accordingly. If the infant be stimulated by its bath no change need be made, but if depression be caused, as shown by blueness of the hands and feet or by subnormal temperature, the bath should be made hotter and the duration shortened until the proper combination is secured.

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THE PNEUMOCOCCUS AS A FACTOR IN HEMOPTYSIS.[1]

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THE epidemicity of hemorrhage in tuberculosis has been noted by careful observers but no one has attempted to give an explanation of it. Those who have referred to it in literature either have suggested atmospheric conditions as the cause of it or have merely mentioned it as a curiosity. With the view of throwing light upon the subject we have undertaken a series of bacteriological studies and herewith present a preliminary report.

Theoretically we were led to believe that if any micro-organism had to do with hemorrhage it would most likely be the pneumococcus because in pneumonia there usually is some evidence of hemorrhage in the rusty sputum. We therefore decided to look first of all for the pneumococcus as the cause. We have studied the ejected blood of a number of cases of hemorrhage in all of which the pneumococcus was found present and we present four cases in which we give the clinical and the bacteriological picture. In one case we also give a pathological report.

Case I. Phipps Institute Case, No. 3,096. (Craig and Montgomery) Abstract.—The patient was admitted into the dispensary on January 24, 1905, and into the hospital on February 17, 1905. He was forty-seven years of age, white, and German. His highest weight had been 160 pounds and his weight on admission was 135 pounds. At the time of admission he had the whole left lung involved with a cavity in the upper lobe. Tubercle bacilli were found in the sputum. His temperature was 100.3° F., pulse 100 and respiration 32. On March 3, his

1 From the Laboratory of the Henry Phipps Institute.

temperature went up to 102.2° F., his pulse to 124 and his respirations to 38. By March 17 his temperature had come down to 99° F. and on this day he had a hemorrhage. On March 18 his temperature went up to 101° F. and on March 19 to 101.4° F. By March 22 his temperature had come down to normal and on this day again he had a hemorrhage. After this the temperature did not again go above 100° F. On April 3 he had a hemorrhage of 18 ounces. It was the blood from this hemorrhage that was studied in the laboratory. On April 7 he had a hemorrhage of 40 ounces from which he died.

Laboratory Report on the Blood. (Ravenel and Irwin).—Examination of the blood in smears stained by Welch's method shows pneumococci in large numbers. Cultures also show streptococci. The sputum taken between the hemorrhages was washed in normal salt solution and plated. From the plates streptococci (diplo) and pneumococci were isolated; also *Staphylococcus aureus* and *albus*, and a sarcina.

Autopsy (C. Y. White) *Extract.*—Pathological Diagnosis: Chronic pulmonary tuberculosis with cavity formation. Subacute miliary tuberculosis of the lungs. Chronic fibroid pleurisy. Pulmonary hemorrhage. Acute splenitis. Diffuse nephritis. Hour-glass contraction of the stomach. The whole lower lobe contains irregular caseous nodules varying in size from two mm. to five mm. These areas of caseous bronchopneumonia are hard and feel like shot embedded in the lung tissue.

Laboratory Study of Cultures made at Autopsy. (Ravenel and Irwin).—Streptococci and pneumococci were isolated from the lung cavity.

Case II. Private patient. (Walsh and Bennett).—Male, white, aged thirty-three years. He had pleurisy and probably pneumonia in 1894, but had had no hemorrhages up to that time. He then had tubercle bacilli in the sputum. During the winter of 1901 to 1902 he had pneumonia and pleurisy with frequent hemorrhages. After that he was in good health and he reached the highest weight of his life just prior to his fatal illness in 1905, namely, 149½ pounds. In March, 1905, he developed a slight cold which did not discommode him. A few days thereafter, March 15, 1905, while on the street, he was taken with a hemorrhage following a slight cough. His temperature went up to 102.4° F. almost immediately after he was taken with the hemorrhage and rose more or less daily during the remainder of his illness. As a rule it varied between 100° and 101.4° F. His illness lasted twenty-six days and during this time he had 13 hemorrhages, the average amount of blood lost at each hemorrhage being eight ounces, although on two occasions it exceeded sixteen ounces. He was so sick from the beginning of his illness that a thorough examination was not possible. From the examination which could be made there appeared to be infiltration of the entire right lung with a cavity in the apex. The breath sounds were obstructed on both sides by large coarse moist râles and there was a pleuritic rub over the left apex. The pulse ranged between 98 and 110 until the seventeenth day of the illness, and then ran up to 120 and finally to 140. The respirations varied between 18 and 30 until the twenty-third day and then ran up to 44 and later on to 50. On the twenty-third day in addition to the ordinary treatment injections of anti-pneumococcus serum were begun, 20 c.c. being injected at 9 P.M. of that day and the same amount at 7 A.M. on the following day. Thereafter 20 c.c. were given every six hours until the morning of the twenty-sixth day of the disease when the serum was suspended on account of delirium. Under serum treatment the pulse came down from 140 to 116 and the temperature from 100.4° to 99.2° F. and the respirations from 44 to 32. On the evening of the twenty-sixth day the patient died suddenly just as the physician in attendance was preparing to give another injection of serum.

Laboratory Report of Blood. (Ravenel and Irwin).—Pneumococci and streptococci in about equal proportions. There was no autopsy on the case.

Case III. Private patient. (Flick).—Female, aged twenty-nine years, married. Began to show active symptoms of tuberculosis six months ago. She came under observation April 10, 1905. At that time she had infiltration of the upper lobe of the left lung with some softening and she had tubercle bacilli in the sputum. There was no evidence of the existence of a cavity. On April 25, her temperature was normal and her pulse was 80. On April 15, a patient with pneumonia was brought into the room next to the room occupied by her. The nurse who waited on the patient with pneumonia also waited on her. On May 5, she took a chill in the morning and had a hemorrhage in the afternoon. Her temperature went up to 99.4° and to 100° F. on the following day. On the fourth day it came down to practically normal. No physical signs of pneumonia could be made out. She got over the attack very speedily and on May 19, was again in a normal condition.

Laboratory Report of the Blood. (Ravenel and Irwin).—Blood shows practically pure culture of pneumococcus. Stained preparations show large numbers of pneumococci, with very few organisms of other species.

Case IV. Private patient (Flick).—Female, aged twenty-four years, single. She came under observation March 30, 1905. She has had tuberculosis for some years. When she came under observation she had some infiltration throughout the entire right lung and in the upper lobe of the left. She had a cavity in the upper lobe of the right lung. She gave a history of having had a hemorrhage one year ago. On May 20, 1905, she had gained fifteen pounds in weight and had improved very much in every way. Her temperature at this time was normal and her pulse

was quite fair, ranging from 92 to 102. She was an intimate friend of Case III, and during the latter's attack was in very close association with her. On May 29, 1905, she had a hemorrhage. On the following day temperature went up to 102° F. and her pulse to 140. The attack lasted only a few days when her temperature and pulse came down to the previous condition. There were no physical signs of pneumonia to be discovered.

Laboratory Report on Blood. (Ravenel and Irwin).—Pneumococci in large numbers in stained preparation. Cultures of pneumococci isolated from plates. On the plates also were molds and a spreading bacillus, evidently contaminations from the mouth and container.

In addition to the cases here quoted we have a few others in which the pneumococcus was likewise found but we do not use them because in one instance our records did not connect the clinical history with the laboratory report in a way to make it absolutely reliable and in the others we did not get the pure blood but instead of it blood-streaked sputum. In one of our cases which we do not quote here and in which there were severe hemorrhages extending over considerable time, we got only sputum for examination after the hemorrhages had ceased. From the clinical history we had every reason to believe that the patient had had pneumonia of rather a severe type and we found pneumococci in the washed sputum given off some weeks after the hemorrhages had discontinued.

It will be noted that the streptococcus was present in most of the cases and the question may be asked why the pneumococcus is selected by us as the probable etiological factor. We have not lost sight of the possible influence of the streptococcus in the causation of these hemorrhages. In our examinations of smears stained by Welch's method the pneumococcus has been numerically vastly the predominating organism in every case except one. Our plates which have been made on serum-agar by the smear method, going through the series of four without reinoculating the platinum spatula, have shown approximately the same results, hence we feel justified in believing that the pneumococcus has been the most important organism present.

The number of cases which we present is too small to warrant any conclusions. Our facts, however, are very suggestive and open up a very interesting field of investigation. If the pneumococcus is responsible for the hemorrhages in tuberculosis we shall have to change our views about both the etiology and treatment of hemoptysis and we probably shall be able to prevent hemorrhages to a much greater degree than we have in the past.

In two of our cases we apparently had a history of exposure to pneumonia in the one and a history of exposure to another case of hemorrhage in the other. These two cases occurred in an institution in which four other cases of hemorrhage of which we did not get the blood for examination occurred about the same time.

The case of pneumonia was brought into the institution on April 15. A case of hemorrhage developed on April 21, another on April 25, and two more on April 29. Our Case III occurred on May 5 and Case IV on May 29. The nurse who waited on the pneumonia patient came in contact with the other patients in the institution and waited on some of them. The first five cases probably developed from the case of pneumonia and the last from the fifth case. The last patient was in intimate contact with the fifth, and not much in contact with the nurse who waited on the other patients.

We wish to express our appreciation of the courtesy of Drs. Craig, Montgomery, Walsh and Bennett in giving us their cases to report.

DERMOID CYSTS OF THE MEDIASTINUM.

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(Continued from Page 438.)

40. *Griesshammer.* Festschrift des Krankenhauses Dresden-Friedrichstadt, 1899, pp. 337-345. (Cited by Dangschat.)

A woman, aged twenty-eight years, complained for several years of dyspnea and pains in the left half of the chest. On operation a large dermoid cyst was laid bare which touched the thoracic wall anteriorly, posteriorly, and to the left. The pleural cavity was free from adhesions and was not connected with the tumor; together with the left lung it was pushed upward *in toto.* On account of the adhesions to the chest wall the cyst could not be removed; drainage was carried out and the patient was discharged well. The tumor consisted of a cavity containing a dirty pulp. The wall presented the picture of the skin without hairs.

41. *Mandlebaum.* A Case of Dermoid Cyst of the Mediastinum. *The American Journal of Medical Sciences,* Vol. CXX, p. 64, 1900.

F. G., female, aged thirty years, was admitted to the Mt. Sinai Hospital January 24, 1898. Family history negative. Previous history negative. Ten months before admission she noticed a small swelling on the right side of the chest anteriorly at the level of the third rib; no tenderness or redness here but it is at times painful. Four months ago it began to increase in size suddenly, but for the last month there has been no change in it. The patient continued to nurse her infant, and aside from the presence of the tumor she considered herself in perfect health.

Status Præsens.—Patient is tolerably well nourished. Opposite the third rib on the right is a tumor the size of an orange, the skin over it being freely movable; it is adherent to the underlying tissues. The mass is neither tender nor sensitive; it gives a distinct sense of fluctuation. No pulsation in it. Aspiration with a small

trocar reveals the presence of a thick, yellowish fluid of honey-like consistency. No pressure signs are observable. Cough and expectoration are absent.

Three days after admission the patient was operated by Dr. Gerster. The cyst was ruptured and a thick, brownish fluid containing small particles of gritty matter was evacuated. The cyst was found to be multilocular. The last pocket incised was seen to lead deeply into the thorax, when explored with a probe. By means of a scoop, a considerable amount of thick fluid, gritty, calcareous matter, and strands of hair were removed from the intrathoracic portion of the cyst, which was seen to occupy nearly the entire anterior mediastinum, the cyst wall being attached to the pericardium, diaphragm and right pleura. Five days after the operation the base of the right lung consolidated. Though signs of resolution occurred, the patient developed a toxemia and died March 17, 1898.

Autopsy.—The cyst found at operation was described. The inner surface presented several polypoid excrescences, covered with fine, short hairs. Tumor was also adherent to the large vessels in the mediastinum. The lining of the cyst resembled skin and contained a few sweat glands, and many sebaceous glands and hair follicles.

42. *von Török.* Teratom der Brusthöhle (Fœtus in Fœtu). *Zeitschrift für Heilkunde (Abtheilung für Chirurgie)*, Bd. XXI, p. 263, 1900.

A. L., female, aged four and one-half years, entered the hospital January 27, 1900, with the diagnosis of caries of the ribs. Three years ago an abscess appeared in the back; operation with the removal of a small piece of rib. For ten days the child had severe pains in the back, where a second abscess has apparently formed.

Status Præsens.—Child is small for her age and rather poorly nourished. She has scoliosis. Downward and inward from the angle of the left scapula there is a fluctuating tumor the size of the palm, part being above and part below the tenth rib. Pulse and respiration accelerated; temperature normal.

On January 30, 1900, the patient was operated upon. A cyst was opened from which a large quantity of fatty fluid escaped. On palpation an opening into the thorax was found under the tenth rib. On removing the finger long hairs appeared. A firm cyst wall resembling skin was seen in the wound. On account of adhesions only a part of the tumor could be removed; this contained bone and teeth and was covered with skin. February 14, examination revealed inflammation in the right upper lobe and the child died eight days later.

Autopsy.—In addition to the points noted at operation the tumor was seen to contain cartilage. The sac was firmly attached to the diaphragm and the vertebral column. Bronchopneumonia was looked upon as the cause of death.

43. *Foucher.* Contribution à l'Étude des Kystes Dermoïdes du Poumon. Thèse pour le Doctorat en Médicine, Lille, 1901, 8°.

The patient is a male, aged twenty-seven years. Family history negative. He had pneumonia at the age of six; since then his health has been excellent. Five or six months after completion of army service the present trouble began with cough, the paroxysms becoming more frequent, accompanied by vomiting; dyspnea was very severe. This condition persisted for about two months, then the symptoms gradually decreased and practically disappeared by June, 1899, when everything returned with the intensity previously described. From this time the affection continued to progress with periods of exacerbation alternating with remissions more or less long. About the middle of October, 1899, the patient was seized with extreme pain in the side, and Dr. Maillet (who furnished the history) found all the signs of a large pleuritic effusion which was resorbed little by little, but a slight prominence of the right side of the thorax persisted. The cough, dyspnea and vomiting increased in severity; at the same time the bulging grew more prominent. The patient entered the hospital February 10, 1900. Examination shows that the patient, in spite of his emaciation, has good musculature and is well developed. The dulness (see Figure 8) in front is absolute; it extends to within three finger breadths of the clavicle and is continuous with the hepatic dulness; the edge of the liver does not pass beyond the short ribs. On auscultation, no sound is heard over the dull area. Behind, percussion and auscultation are practically negative. Exploratory puncture was made in the fourth right interspace, just below and outside of the nipple. From the trocar there escaped a fluid, thick, greenish yellow, presenting all the appearances of a thick pus, and little yellowish, round balls, which resembled actinomycotic granules.

Six cm. of the fourth rib were resected and the pleura incised. A stream of thick, creamy matter escaped; a tuft of small hairs came away at the same time. The cyst contained 2-3 liters of sebaceous material. The cavity was lined by a grayish, uneven membrane. The fluid contained in the cyst included no formed material; it was an emulsion of fatty matter in a serous fluid. The small yellowish globules were formed of amorphous fatty matter and contained tissue débris. No crystals, nor fatty acids, nor cholesterin. Material was sterile; cultures negative. Patient had not completely recovered at the time of writing. Cyst was the size of a small mandarine.

44. *Sommer.* Dermoid Tumor of the Lung. *The New York Medical Record*, Vol. LX, p. 475, 1901.

The patient, a man, aged twenty-seven years, died of phthisis pulmonalis chronica. At autopsy both lungs were markedly tuberculous and cavernous. At the apex of the right lung was found

a cystoid body, containing masses of hair and some dentoid bodies.

45. *Christian.* Dermoid Cysts and Teratomata of the Anterior Mediastinum. *The Journal of Medical Research,* Vol. VII, p. 54, 1902.

The patient is a female, aged thirty-eight years. She has complained of "trouble in the chest" for the past six years. There is a history of night sweats. She has coughed up hairs at intervals for two years. For five weeks she has suffered from severe pain in the chest and has had cough with purulent expectoration. During this time there have been several attacks of hemoptysis, during some of which she has almost strangled. There was dulness in the right chest, and this has been noted to decrease in extent after attacks of coughing, during which much material was brought up. Several hours before death, on March 21, 1901, there was a gush of blood and pus from the mouth and with this material were mixed a few hairs.

Autopsy.—A tumor the size of a cocoanut is found occupying the lower part of the anterior mediastinum. On opening this a pint of fluid and solid material escapes. Right lung firmly adherent throughout and pushed backward and to the right by the tumor. Fibrinous pericarditis. The tumor is between the right lung and the pericardium; it extends upward to within 6.5 cm. of the apex of the right lung. It is not adherent to the diaphragm, though in apposition to it and to anterior chest wall. In the cyst there remains some greasy, soft, friable matter and long, delicate, curly, blond hair. The inner wall is smooth, glistening, whitish membrane. In parts of the tumor there are small, scattered, bony plates. An opening into a medium-sized bronchus is found. The lining of the cyst presents all the characters of skin.

46. *Medoei. Berliner klinische Wochenschrift,* Bd. XXXIX, p. 719, 1902. Budapester Brief.

The author observed a case of dermoid cyst in a suckling. It was located in the anterior mediastinum and perforated into a bronchus, which led to the expectoration of the characteristic contents (hairs, cholesterin, fat) on coughing.

47. *Fofanow.* Sluchai teratomi lyokhava. *Kazansky Meditsinskiy Journal,* II, p. 170, 1902. Abstracted as Ein Fall von Lungenteratom. *Centralblatt für Chirurgie,* Bd. XXIX, p. 1075, 1902.

The patient was admitted to the hospital with extreme dyspnea, weak pulse, cyanosis of the upper part of the body, and swelling of the right half of the thorax. Death occurred soon after the patient entered the hospital.

Autopsy.—A teratoma weighing 1,300 grams was found in the right lung. It consisted of connective tissue, fat, bone, cartilage, hairs and muscle tissue arranged in various combinations in different parts of the mass. The tumor contained numerous cysts.

48. *Türk. Wiener klinische Wochenschrift,* Bd. XVI, p. 203, 1903. Operative treatment by *von Eiselberg.* Zur Therapie der Dermoide des Mediastinum anticum. *Archiv für klinische Chirurgie,* Bd. LXXI, p. 575, 1903.

A woman, aged fifty-one years, was admitted to Neusser's clinic October 20, 1902, with the diagnosis of left-sided pleuritic exudate. Thorax was somewhat widened. Anteriorly the entire left half gave dulness (see Figure 9) of marked degree from clavicle to base of lung, extending into left axilla and terminating about in the scapular line. In the region of the dulness compression breathing, weakened bronchophony with bleating quality, absence of fremitus. Lower lung border is freely movable. Mediastinum is pushed about one finger breadth beyond the right sternal line, the heart near the right nipple line. Right lung negative. The patient hesitated about entering the hospital because she had no fever and felt well, except for cough and moderate dyspnea on exertion, which she had noticed since March, 1902. Roentgen examination showed nothing more than the physical examination. On November 10, an exploratory puncture was made in the posterior axillary line. Six trials gave no fluid. After the last, however, a drop of whitish, thick fluid came from the needle. Under the microscope this was seen to consist of large epithelial cells, for the most part without nuclei, which resembled the cells of the horny layer of the epidermis; cholesterin crystals were also found. The possibility of the cells having entered the needle from the skin after the repeated insertions of the needle was considered, and it was decided to repeat the operation. The patient left the hospital, making this impossible. On December 16 she returned; had felt sick and had had fever for two days. Physical condition was unchanged; slight evening rises of temperature (38.5° C.) which soon disappeared. On December 18, exploratory puncture was made in middle axillary line with a needle 7 cm. long. No resistance was met with, but no fluid could be obtained; on withdrawing it about ½ c.c. of an opaque fluid was expelled, having a thick, oily appearance, in which small particles were suspended. In addition to the previous finding fat droplets and epithelial cells with fatty degeneration were seen. Neither leucocyte nor erythrocyte was found. This gave the diagnosis of dermoid.

The operation was performed January 21, 1903, by von Eiselberg. He resected 25 cm. of the third and fourth ribs between the left sternal and anterior axillary lines. On laying bare the pleura one could see a white tumor through it, over which the pleura plainly glided. Pleura was opened, producing a pneumothorax; a slightly nodular, white tumor was exposed. Exploratory puncture of tumor gave a whitish fluid. Tumor was not firmly adherent, but too voluminous to be removed through the opening. Cyst was incised in the upper part and from several cysts which were opened about ¼ liter of friable, whitish contents escaped. Slight adhesions between tumor and lung and pericardium.

The tumor was removed, leaving a large cavity in which could be seen the completely atelectatic lung and the uninjured pericardium. The heart now came more to the left. The separate cysts contained a greasy, oily substance composed largely of cells of the epidermis. No hairs, teeth nor bones. Microscopical examination showed the lining of the cysts to be several layers of cubical epithelium. The recovery was somewhat protracted and the post-operative condition at times grave, but the patient did well eventually, so that two months after operation the following note was made: Patient looks very well, has only a small amount of secretion in the wound, which has healed; the left lung has expanded to the normal size and vesicular breathing is heard over it. Heart also normal.

49. *Predtschenski.* Dermoid Cyst in the Thoracic Cavity. *Praktitscheski Wratsch,* St. Petersburg, II, p. 55, p. 83, 1903.

V. S., female, aged nineteen years, entered Prof. Kishkin's clinic September 9, 1902, complaining of pain in the right side and severe dyspnea on exertion. The present disease began in the fall of 1900. Since the summer of 1901 the symptoms have been more troublesome. Hemoptysis for ten days. During the past summer the patient has been at home and has felt well.

Status Præsens.—Temperature normal. Lying on the left side produces severe dyspnea. Between the second and fourth ribs on the right there is a well marked protrusion. Expansion diminished on the right. Tactile fremitus is weaker on the right side and is absent over the prominence. No tenderness on palpation. Percussion of right apex gives relative dulness, increasing to the third interspace, where it is absolute; from the fourth rib downward it becomes clearer. Behind over the right scapula the sound is dull with a tympanitic shade; just above the inferior angle of the scapula the note is clearer between the two areas of absolute dulness. In the axilla the percussion note is duller, passing into absolute dulness. In the axilla the percussion note is clearer between the two areas of absolute dulness. Left lung normal. On auscultation vesicular is everywhere weakened on the right, with absence of breath sounds over the dull areas; dry râles and harsh vesicular on the left. Slight cough; mucopurulent sputum, no tubercle bacilli. Heart apex in the sixth interspace in the anterior axillary line; otherwise the heart is negative. Lower edge of liver extends two finger-breadths below the margin of the ribs in the mammillary line. Blood count normal. Exploratory puncture into absolute dulness in front four days after admission gave a yellowish, purulent fluid, containing pus cells, fat droplets, cholesterin crystals and detritus; culture negative. September 20, puncture was made behind under the scapula with like result. Diagnosis: Encapsulated empyema.

On October 5, 1902, the patient was operated upon by Prof. Bodroff. The seventh rib was resected in the axilla and a cavity was encountered, from which four tumblerfuls of thick, purulent fluid containing hairs and coagula were evacuated. October 9 the ninth rib in the scapular line was resected to drain a cavity not emptied at the first operation. Both cavities were drained. A month and a half after the second operation the patient was on the road to recovery. The right lung has expanded. A part of the cyst wall which was excised resembled skin in every way.

50. *Dangschat.* Beiträge zur Genese, Pathologie und Diagnose der Dermoidcysten und Teratome im Mediastinum anticum. *Beiträge zur klinischen Chirurgie,* Bd. XXXVIII, p. 692, 1903.

Female, aged twelve years, entered the surgical clinic at Rostock in August, 1899. She had always been strong and healthy. Since September, 1898, she frequently complained of a feeling of pressure in the left side of chest and temporary dyspnea. In April, 1899, she had the signs of pleurisy with effusion on left side, with marked signs of compression; heart palpable in fifth interspace to right of sternum. The border of dulness (see Figure 10) was not the usual one for pleurisy with effusion, since it curved from the third rib in front downward to the eighth rib behind. With marked diuresis the child recovered. Shortness of breath and cough remained; although there was no more fever, the dulness increased, so that it reached the clavicle in front and the eighth rib behind. On July 22, 1899, exploratory puncture in the fourth interspace, left anterior axillary line, yielded 400 c.c. of bloody fluid. Subjectively the patient improved; objective findings the same. A second exploratory puncture on July 3 was negative. In the next few days a manifest bulging occurred on the left side of the chest between the left sternal and nipple lines, and from the second rib down; the left side was more voluminous, and the dulness extended behind up to the spine of the scapula. Towards the end of August the general condition grew worse and marked dyspnea set in with rise of temperature to 40° C., on account of which the patient entered the clinic.

Status Præsens.—A thin, pale child, practically orthopneic. Face slightly cyanotic, pulse accelerated, small, same in two radials. Left side of thorax does not expand, but is more voluminous than right. Larynx negative. Distressing, dry cough without expectoration. Percussion showed some increase in dulness upward and to the right.

Operation by Dr. Chamisso, November 6, 1889. Exploratory puncture was made in fourth interspace near the nipple line and yielded 300 c.c. of a bright, light yellowish fluid which was clear at first, later cloudy. No more could be obtained here. Dulness, also dislocation of heart, remained unchanged. In the ninth interspace just behind the posterior axillary line offensive pus was obtained; ninth rib was resected, and a body with

smooth surface was found firmly adherent to the pleura costalis; this did not move with respiration. As the condition of the patient was bad, the operation was discontinued. Physical signs remained unchanged. Traube's space remained clear. On October 10, 1899, Prof. Garré operated. Serous exudate was obtained from puncture in fourth interspace, anterior axillary line; suddenly, thick, purulent material poured into the needle. The fourth rib was resected. A great deal of pus was evacuated; a cavity remained in which one could palpate uneven tumors varying in size from a hazelnut to a small apple. Microscopical examination of the pus gave, in addition to polynuclear leucocytes, clumps of streptococci and numerous pavement epithelial cells, both isolated and in strata. Two of the small tumors were excised and it was seen on examination that they were covered with a stratified pavement epithelium, having a horny layer on the surface. Patient stood operation well. General condition improved. Cavities seemed to decrease. In the back, soft vesicular is heard everywhere. Expansion of lung is also evident. December 3, 1899, she left the hospital. October 16, 1900, patient returned to hospital greatly emaciated and pale. Improved somewhat. Left hospital in January, 1901. Condition somewhat improved at Whitsuntide, 1902, though she had had hemoptysis twice.

51. *Dangschat. Ibidem. von Eiselberg.* Zur Therapie der Dermoide des Mediastinum anticum. *Archiv für klinische Chirurgie,* Bd. LXXI, p. 575, 1903.

M. S., female, aged eighteen years, entered von Eiselberg's clinic in July, 1900. She was taken with pain in the left side of the chest in September, 1899; grew worse in the following December. Early in 1900 a physician was consulted. Dulness (see Figure 11) was found over left lung, which was continuous with heart dulness in front, and reached behind to the angle of the scapula. Breath sounds over dull area greatly weakened. April, 1900, exploratory puncture with removal of a yellow, opaque fluid. In the middle of May, 1900, Dr. Heidenhain resected the third rib and exposed a cavity in the left upper lobe; an offensive, fatty material containing long hairs was evacuated. Since then a mucous, yellowish material, as well as atheromatous masses and hairs, have escaped from the wound.

Status Præsens.—Patient is well formed and well nourished. Heart and right lung normal. Thorax somewhat prominent above and below left clavicle. Diminished expansion on left side. Metallic note on percussion from apex to fourth rib in front, behind from apex downwards to a point just above the angle of the scapula. No change in note on opening and closing of the mouth. No breath sounds over this area. Over the lower half of the left thorax, somewhat weakened vesicular breathing. July 24, 1900, patient was operated upon. Inner surface of cyst previously found had appearance of normal skin, but there were numerous prominences on which dark blond hairs grew. Removal of the cyst was not feasible. Flaps were turned in and attached to inner wall of cyst. For several days patient did well. Patient then had three hemorrhages within seventeen days after operation, the last two from the internal mammary vein, and died as the result of the last one.

Autopsy.—Above and anteriorly the left lung is adherent to a hard tumor which here is contiguous to the inner surface of the thorax. The tumor extends from the costochondral line toward the left to the thoracic wall, is about 5 cm. from the heart apex below and opens above into the sac which extends anteriorly into the region of the apex of the lung. Left lung pushed downward. The anatomical diagnosis is: Dermoid cyst of anterior mediastinum. Cyst is the size of a child's head. Hairs are 1-1½ cm. long. Pieces of bone and cartilage are found in the wall.

52. *von Eiselberg. Ibidem.*

A child, aged three years, was brought to Albrecht's polyclinic with severe dyspnea and cyanosis. Examination gave the signs of pleurisy with effusion on the left side; exploratory puncture yielded a hemorrhagic fluid. Exitus occurred in a short time.

Autopsy.—A dermoid cyst was found in the mediastinum. The cyst was loosely adherent to the lungs. Microscopical examination showed that the tumor was a teratoma undergoing sarcomatous degeneration; in it bone and cartilage were discovered.

53. *Madelung.* Ueber Extirpation eines Dermoid des Mediastinum anticum. *Beiträge zur klinischen Chirurgie,* Bd. XLI, p. 217, 1903.

Sergeant S., aged twenty-seven years, was taken with pains in the right side of the chest and in the right shoulder in 1884. This condition persisted for three years, the patient being able to do light work. April 6, 1887, a tumor was found in the right supraclavicular space; this was punctured May 1, and a yellowish fluid, having a sheen on the surface, was evacuated. On incision a sound could be passed downward under the sternum. Two weeks later the patient developed an evening rise of temperature and dulness near the sternum gradually spread downward on the right side. The fifth rib in the axillary line was resected on June 16, and a seropurulent fluid, 2,000 c.c. in amount, escaped. Shortly afterward the patient, a strongly built man, first came under the author's observation. The wound healed, a fistula remaining above, from which there was a slight discharge; at times long black hairs came away, often rolled into a ball. Sounding showed the sac to extend far down beneath the sternum. The patient left in poor health in 1888. He died May 15, 1893; cause not known.

54. *Madelung. Ibidem.*

On July 7, 1893, the patient, N., a girl, then six years of age, had a fall and received a severe

blow on the right anterior thoracic wall. The next day signs of effusion into the right pleura were found; hemothorax was suspected. She was confined to bed for three weeks. The effusion subsided, but the child had a dry cough, as she had had, in fact, before the accident. In June, 1894, there was no sign of the effusion remaining. June 30 the patient was again taken with right-sided pleurisy with copious effusion. Exploratory puncture gave foul-smelling pus, and the attending physician, Dr. Killian, resected a rib below the right scapula; a large quantity of dark brown, foul, purulent fluid was evacuated. The patient entered the surgical clinic at Strassburg June 12, 1899. The child, now twelve years old, was pale and greatly emaciated. Everything pointed strongly to old empyema. A radiogram was taken. In the upper part of the right thorax there was functionating lung. From three fistulæ a copious, thin, watery pus escaped. Operation June 14, 1899. Behind the second rib an opening was made into a large cavity situated behind the sternum; in it was seen a projection about the size of the end of the thumb, covered with skin. This and an adherent tumor mass were removed. The cavity was packed with gauze. Recovery was uneventful, the temperature always remaining normal. September 29, 1903, there was good resonance over both lungs. Vesicular somewhat weaker in right back below than on left; otherwise negative. The patient, now sixteen years of age, is able to take walking trips into the mountains.

Histological examination of the tissue removed at operation showed the picture of a section of skin with epidermis, hair follicles, and sebaceous glands. In the tumor cartilage was found. The contents consisted of fat and desquamated epithelium.

55. *Shostak.* Dermoid Cyst of the Anterior Mediastinum. *Wratschebnaja Gazeta,* St. Petersburg, XI, p. 1087, 1904.

B. B., a female, aged twenty-two years, entered Simbirsk Hospital July 20, 1903. Patient remembers a tumor in the jugular region since childhood. One year ago she began to cough violently. Three weeks ago the patient caught a cold and the tumor began to grow rapidly, occasioning some dyspnea and dysphagia. There have been chills and frequently a feeling of numbness in the right hand.

Status Præsens.—Patient is poorly nourished, pale, some cyanosis of the visible mucous membranes. Pulse alike in the two radials. Neck is much thickened and irregular; there is a tumor the size of a man's fist anteriorly and below, which extends to the right and is continuous with another above the clavicle. It pulsates synchronously with the radial pulse. The skin over it is thin; veins dilated. In the region of the right scapula there is a prominence. Breath sounds are absent in front down to the third rib and behind up to the spine of the scapula. Percussion gives dulness in front confluent with that of the heart. Left lung normal. Auscultation of heart negative. Exploratory puncture gives a somewhat yellowish pus.

A wide incision two finger-breadths outside the median line in the neck gave three tumblerfuls of purulent fluid mixed with small yellowish coagula and a mass of hair. The finger introduced into the wound descended into a cavity behind the clavicle and scapula; the bottom could not be reached. Posteriorly the finger entered a separate pocket. The cavity was drained. August 4, 1903, the patient died. No autopsy.

56. Author's case.

(To be Continued.)

THE COUNTRY PRACTITIONER.[1]

BY B. R. RILEY, M.D.,
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THE country practitioner as a surgeon seems ludicrous to the larger part of the profession to-day, so great has been the retrograde change that has almost imperceptibly taken place. The trend of the present surgical status is to deteriorate the ability of one, and increase that of another; so to educate the laity that they will soon lose all confidence in their family physician and seek the advice of some hospital attache for every ailment, because of his larger experience.

The practice of medicine is a broad subject, and all of its branches cannot be fully grasped in detail by any one mind which at the same time enters the field of practice, so, of necessity, there must be specialists; but just where the specialty begins and general work ends is a question that must be answered by each individual practitioner alone. At present the lines are being drawn too closely and the tendency is to make the general practitioner in the country a weak man, at least in a surgical way. That the average country practitioner is a fair diagnostician can hardly be disproved, and that his general practice makes him an all-around man cannot be denied, yet so thorough has been the so-called education in a surgical way, that he approaches a case from all sides, except a surgical one. So thorough has been the training of the public that if the general practitioner has a case at all, it either belongs to the specialist, or else is a case where some of the more elegant preparations of some pharmaceutical house alone are required.

Almost all cases of surgery are given the glad hand on their departure for the city, because of the country practitioner's open acknowledgment of the superior ability of his city brother, and I want to say that his city brother deserves the esteem, because his experience has been greater, his knowledge of surgery has been added to by the cases sent him by the country practitioner. The country practitioner has been so busy looking after the interest of medical cases that he has not even attempted a review of surgery from any standpoint.

[1] Read before the Kansas State Medical Society at Wichita, May 5, 1905.

There are cases where the people are too poor to go to the city to receive surgical attention, and to-day those cases are neglected. Given a case of appendicitis in a very poor family, and the general practitioner in the country tries to resurrect a treatment for a condition for which one author says, "There is no medical treatment," and after a steady advancement toward a fatal end, bemoans environment, public opinion, etc., and watches death do its work without the least intimation of the city, hospital, etc., because he knows that the financial, as well as the physical, condition of his patient will not stand it. Supposing the case in a well-to-do family and the patient is advised to go at once to the city and receive surgical care for his condition. If the case be an acute attack, and yields to treatment, he will never consent to go during the interval between attacks and when a second attack takes place you hustle him to the station, place him on the train, and proceed to ship him to the city, although during the trip to the hospital from home, there is every chance for trouble from traumatism.

Too many cases of appendicitis are sent to the hospital. When you look at the ill-effects of travel, you certainly ought never to send a patient with appendicitis to the city, except during the interval. If the country practitioner feels himself incompetent, it is his duty to have the surgeon brought to his cases of appendicitis instead of sending them to the city. Strangulated hernia treated by the country practitioner, receives enough traumatic injury generally to kill before even an anesthetic is given, and from the beginning of the administration, usually the injury to the parts is too great before complete anesthesia has taken place. The American Text-book of Surgery says ten minutes is long enough to use taxis, that is, under complete anesthesia; but the country practitioner usually reads it ten hours.

There are so many sufferers from hernia throughout the country, who from year to year continue to burden themselves with trusses, and the country practitioner seldom, if ever, tells them of a radical operation for the cure of a condition that he knows can never be cured by truss wearing. So low is the mortality in these cases that operation for the radical cure should be advised by all in nearly all cases. Many a case of minor surgery is neglected until the damage done is too great to be easily repaired, and thus becomes a case for shipment.

The country practitioner who gives no thought to surgery other than to bemoan his environments and send his patients to the city is the rule, not the exception. Regarding environment, I wish to quote from Ochsner's work on Clinical Surgery. After advising hospitals as the place for surgical work he says, "As a matter of fact, there is but one point to be borne in mind in the arrangement of a room for operating, namely, infection, and that no wound infection is to be considered, except from contact; not that infection from the air is absolutely impossible theoretically, but that practically a wound remains aseptic unless infectious material has been placed in it by dirty hands, dirty instruments, appliances or sponges, ligatures, sutures or dressings, unless the infectious material existed in the patient's body at the time of operation," and continues with this statement, "but in any case in which a clean surgeon with clean assistants and clean appliances operates on a clean patient, it can be expected with a fair degree of certainty that the wound will remain aseptic, no matter what the surroundings may be."

The country practitioner usually reduces a dislocation or treats a fracture and seldom if ever loses a great deal of sleep over the worst cases, yet the city surgeon will approach a dislocation or fracture with the one thought, that it is a walking advertisement of either inferior or average ability, and actually loses more sleep over a simple fracture than an abdominal section. Thus the country practitioner assumes the burden of responsibility that seems to rest heavy on the city surgeon. Why? The public is accustomed to having fractures reduced at home. If he accepts the responsibility and takes the chances that bring little money or prestige and may bring criticism and damage suits, why not attempt operations that bring money and fame with less chance of disgrace. The day is dawning when the country practitioner will refuse longer to act as shipping clerk for his proud city confrères.

That our environments are bad is true; but, with all due respect to the hospital and city surgeon, we can make the average home as sterile, and our hands as surgically clean, and, if capable, we can with impunity attempt the same work with the same assurances of success that the operator in the city has. We have even better chances for success, by having, as a rule, patients who are in the beginning physically able to stand shock and are good subjects to withstand any ordinary complication in a surgical way. It may be true that certain cases belong to the specialist, but it lies with the country practitioner to say whether it is so of surgical cases, whether he shall send all of his major operations to the city or not. Each country pratictioner must be the judge as to where the specialty begins, and that decision must be arrived at conscientiously, leaving in the dark public opinion. No man should allow public opinion to debar him from his duty. We should not overlook our duty toward out patient, be he poor or rich, and should ever hold before us one thought—competency. We should not let conservatism take the place of common sense. Conservative surgery is all right, but the country practitioner is too prone to neglect or omit and call it conservatism, when in reality it is as much a malpractice act to neglect as it is to do wrong in the first place.

Unless there is a radical change, it will only be a short time until surgery will be an extinct

feature of country practice, and if a change is to be made it must be brought about by the country practitioner. He must do more surgery, and competency is to be obtained by study and postgraduate work. Every two or three years should find us spending our vacations at some postgraduate school and visiting the hospitals and preparing ourselves for work. After we have become competent we can more easily overcome the few drawbacks of environment and let public opinion change to suit the occasion.

Speaking of the country practitioner, from a surgical standpoint, I often wonder if the city surgeon does not look upon him as the soldiers did upon "D'ri" in Bacheller's work, "D'ri and I," and think he needs rest, etc. I think it time for the country practitioner to go on guard duty without the countersign, and halt every case of surgery, if he be competent.

MEDICAL PROGRESS.

THERAPEUTICS.

Chronic Acetanilid Poisoning.—ALFRED STENGEL (*Journal A. M. A.*, July 22, 1905) gives the histories of two additional cases of chronic acetanilid poisoning, both of them of interest from a diagnostic point of view. The first had been regarded as an obscure vascular disorder, and even after the cause was suspected it offered some difficulties on account of the lack of morphologic changes in the blood. Some recent experimental work of Dr. C. Y. White, however, seems to indicate that these are not always readily producible. Another point of interest mentioned is the denial by the patients of the use of the drug which Stengel is inclined to attribute to a moral disturbance during the continuance of the habit; it agrees with his experience in other cases. After their recovery the patients readily admitted the facts. The polycythemia in one of the cases was also of interest, perhaps the more so as there was with it no splenic enlargement, which is common in chronic acetanilid poisoning. This combination had led him to the suggestion on a previous occasion that some of the cases described by Osler as chronic polycythemia with cyanosis and enlargement of the spleen might be due to acetanilid. Lastly, he calls attention to the ease with which neuralgic symptoms were controlled after the withdrawal of the acetanilid. It seems, he says, that the continued use, instead of controlling the neuralgic manifestations, acts as a depressant, and that they occur with even greater frequency than before taking the drug.

Intravenous Injection of Ergot.—TORALD SOLLMANN and E. D. BROWN (*Journal A. M. A.*, July 22, 1905) report the results of experiments, made chiefly on dogs, to determine the circulatory effects of the ergot preparations as found in the market, in therapeutic doses, normally and in the pathologic conditions in which the drug is recommended. Intramuscular injections were first employed, but the effect was so slight they changed to the intravenous method, that used by other investigators. The animals were anesthetized, the injections made into the femoral vein and the blood-pressure tracings taken with a mercury manometer, the connection being filled with 25 per cent. magnesium sulphate. The conclusions reached are, in substance, as follows: The typical effects of the intravenous injection of ergot consist in a large and abrupt fall of blood pressure, followed by a prompt recovery, and generally by a slight and short rise. The volume of the organs varies generally in the same direction as the blood pressure. The changes in the latter are mainly cardiac. This is confirmed by myocardiograms from the intact and excised heart. Ergot causes first a lessening and then an increase of the excursions; both phenomena may occur while the ergot is being injected; the rate of the heart is but little altered. The effect must be directly on the cardiac muscle. There is some oncometric evidence that ergot has a slight vaso-constrictor action, but this is slight and inconstant. There was no evidence of strong constriction or of high rise of blood pressure. With intramuscular injections the preliminary fall of blood pressure is absent. The action is independent of the dose, within wide limits. The relative predominance of fall and rise vary somewhat in different preparations; age, however, does not impair their effect on the circulation. Lowering the blood pressure by any method greatly lessens the effects. Shortly after the destruction of the spinal cord, however, ergot produces a relatively good rise of pressure. Large doses depress the vagus center and the vasomotor endings. It is not acutely fatal, however, in very large doses. The experiments do not point to any useful therapeutic action of ergot in modifying the circulation. The authors, however, do not wish to be understood as denying the clinical evidence in its favor, they merely claim that it lacks experimental evidence in its support. Its peculiar effect on the combs of fowls indicates that certain animals and certain vascular areas are more susceptible to the constrictor action of the drug. It may be so with man; it is conceivable that acting unequally on different organs, it may thus be of benefit in the obscure conditions in which it is recommended. In the face of the negative experimental evidence, however, they think that clinical conclusions should be formulated with caution and conservatism. In conclusion, they notice a peculiar effect, closely resembling that of ergot, that followed the intravenous injection of 0.9 per cent. sodium chlorid solution. This occurred in three dogs and only when the blood pressure was high, and best with rather large doses. It was also most noticed when the ether had been removed for some time and ceased entirely when the animals had passed into shock. The article is a long one, with numerous illustrative tracings.

Treatment of Epidemic Cerebrospinal Meningitis with Diphtheria Antitoxin.—G. L. PEABODY (*Med. Rec.*, May 13, 1905) gives the results obtained in twenty-two cases of the disease treated in this way by himself and Dr. Jacobi in the Roosevelt Hospital. In all but one the diagnosis was proved by finding the meningococcus in the spinal fluid. Of the twenty-two cases four received the antitoxin only subcutaneously, seven received it at different times both subcutaneously and intraspinously, and eleven received it only intraspinously. In only one case did it seem to cause any unpleasant effect. The mortality of the twenty-two cases, while still uncertain, will go well beyond fifty per cent., and the percentage of recoveries to date is a little over nine. There has not seemed to those who have watched the cases, to have been any influence for either good or evil ascribable to the antitoxin treatment.

Treatment of Epilepsy.—A. STRÜMPELL (*Deutsch. Arch. f. klin. Med.*, Vol. 84, Nos. 1 to 4) states that many cases of epilepsy are not benefited much by the usual bromide therapy, since in the place of an occasional attack of convulsions they will now suf-

fer from chronic bromism, which renders them absolutely unfit for any mental work. If the patient is seen after the first attack, an attempt should be made to prevent recurrence by hygienic measures alone. This is also indicated in those cases where the attacks recur no oftener than every two to three months, and frequently the proper diet, with attention to the bowels and suitable occupation and surroundings, will mean a permanent cure. Unfortunately, the bromides cannot be replaced in severe cases, and even bromipin is not always well tolerated. In certain instances, atropine, either alone or in combination with oxide of zinc, will accomplish much. The preparations of valerian will also occasionally ward off an attack, but no permanent results have attended its use.

Action of Diuretics on the Kidney.—O. LOEWI, W. M. FLETCHER and V. E. HENDERSON (*Arch. f. exper. Path. u. Pharm.*, Vol. 53, No 1) have discovered that the intestinal vessels do not contract under the influence of caffeine, and that diuresis is also pronounced in narcotized animals, hence they believe that the slight rise of blood-pressure is not due to an irritation of the vasoconstrictor center, but to direct action upon the heart. The vessels of a kidney entirely deprived of its nerves, are not in condition of extreme dilatation, since caffeine will dilate them still more. This is caused by a direct action of the drug upon the vessel-walls, and also occurs when the nerves are degenerated. In a few cases dilatation did not occur under the influence of caffeine, but even here more blood passed through the kidneys. This latter phenomenon is the real cause of the caffeine diuresis; it may occur without diuresis, but diuresis is never seen without an increased flow of blood through the organs. Experimentally as well as clinically a certain degree of tolerance toward caffeine will be established, since the renal vessels will no longer react toward the drug, but in such cases, urea will still bring about a diuresis. The increased activity of caffeine in nephritis as compared with conditions where the kidneys are healthy, speaks in favor of the Traube-Cohnheim theory of nephritis.

Inoculation of the Horse with Syphilis.—A further contribution to this important subject is made by PIORKOWSKI (*Deut. med. Woch.*, June 8, 1905), in which he describes the later observations on the horse inoculated some time ago with blood taken from syphilitic patients. The latter had been treated with mercury, it being the author's idea that the parasites, being affected by the drug, would give up their poison more readily. Five to ten c.c. were injected every three to four days, and the only sign of a reaction was a slight rise of temperature. Four weeks after the first injection, an eruption appeared, which spread, until after another eight weeks the entire body was covered with papules. The hair fell out in patches, and at the time of the last observation, six months after the experiment was begun, some of the papulæ were still present and new ones were forming. On the animal's back there was a bald spot as large as a child's head. A number of glands were temporarily enlarged. The objection was made that these manifestations might be due to the injection of the foreign albumin, but the author thinks that the reaction was too severe for this. A second horse was injected with blood from the first and soon developed similar lesions, as did also rabbits which received the blood of the second horse. No conclusions are presented, but further observations may throw some more light on the subject.

Value of Theophyllin.—A series of 855 cases, which have been treated with theophyllin, has been analyzed by M. SOMMER (*Therap. Monatshft.*, June, 1905) with the following results: In 653 cases the drug accomplished the desired effect; in 64 the improvement was only relative, and in 127 no good results were seen. In 175 patients, theophyllin brought about a satisfactory diuresis after most other diuretics had failed, and in 110 diuresis was much more marked with theophylin than with the other drugs. No difference in action could be detected between the pure drug and the various salts on the market. After-effects were seen in as high as 35 per cent., but in the great majority these were very slight and chiefly gastric (vomiting, diarrhea and nausea). Two patients died soon after taking a powder, but it is impossible to decide if the latter was really responsible, since the cardiac weakness was extreme in each case. Collapse was observed three times, and in a large number such minor disturbances as languor, insomnia and general nervousness. The best results were seen in cardiac hydrops and (contrary to some observers) in acute nephritis, but good can also be accomplished in chronic nephritis, cirrhosis of the liver and in exudative pleuritis. Often the first dose is not well borne, but a tolerance is soon established. At first no more than 0.1 grams should be given.

GENITO-URINARY AND SKIN DISEASES.

Trichorrhexis Nodosa.—M. L. NEIDINGSFELD (*Jour. of Cutaneous Dis.*, June, 1905) in a discussion of the etiology of trichorrhexis nodosa arrives at the following conclusions: Trichorrhexis nodosa is both a normal and pathological process. It is universally present in long uncut hair as a normal condition, and is probably nature's method of physiologically arresting and stunting an otherwise unlimited and eventually cumbersome overgrowth of hair. When present in excess in a predisposed individual, it becomes a pathological process and abnormally stunts the growth of hair; the nodes are more prominently wounded and are often multiple, separated from each other by uniform intervals of normal hair shafts. Its etiology has been variously attributed to trophic, parasitic and mechanical influences. A mechanical causation is improbable on purely clinical grounds, and is incapable of artificial demonstration. The condition in brushes can likewise not be attributed to purely mechanical causes. A parasitic causation is not commensurate with the evidence thus far adduced from clinical studies, and bacteriological investigations. The most rational explanation of its etiology from physical, bacteriological and clinical investigation, and its analogy to kindred and associated changes in the hair rests in trophic influences, emanating from the metabolism at large, and permeating the hair to its ultimate extent.

Radiology.—During the past year the scientific and practical aspects of the subject of the physics and therapeutics of radio-activity has become of keen interest to the medical world, owing principally to the reports of the wonderful properties of radium and its use in treatment of disease. Many of these reports, even in medical journals, were, considering the superficial data given and lack of scientific methods shown, plainly unreliable. WM. SICKLES (*Wisconsin Med. Jour.*, April, 1905) gives a plain statement of the actual status of radio-activity at the present time. The tendency on the part of mod-

ern writers to include under the term, radio-activity, all the radiations from radium, the X-ray and the ultraviolet rays, is scarcely justified from a purely therapeutic standpoint. There is a great difference between the etheric vibrations of the ultraviolet rays and the X-rays, and the projected corpuscles of radio-active substances. The cathode ray can be demonstrated in a rather "low" vacuum tube, in which it is seen as a bluish line extending from the cathode to the anode. This consists of particles carrying an electric charge, and they may be deviated by a magnet, and will affect a photographic plate. Proceeding from the target and passing through the tube to the outside there is the X-ray, an example of radiation supposed to be produced by the intense disturbance in the ether when the rapidly moving bodies of the cathode ray are arrested by the target inside the tube. The rays from radium consist of three kinds, named the alpha, beta and gamma. "The alpha radiation is very easily absorbed, being unable to penetrate more than a few millimeters of air at atmospheric pressure; the beta ray is more penetrating, while the gamma ray is the most penetrating of all." "Williams has recently shown by some convincing experiments that the beta rays, which deflect them in the same direction as the cathode rays, are analagous and that the gamma ray corresponds to the X-ray." . . . "Pure radium being unstable in air, the salts only, usually the chloride or the bromide, are used." The strength of a specimen of radium is generally referred to that of uranium. The purest specimens of the chloride have an activity of about 1,800,000. "The strength of a given specimen of a radium salt can be crudely measured by its ability to penetrate sheet iron. The finest quality will easily penetrate a mass of iron over two inches thick." Judging from the reports of marvellous improvements, it would seem that American physicians had little difficulty in getting radium, and most of the radium here is known to be useless and of low activity. "Most of the cases treated in this country have been with a radio-active salt of from 300 to 7,000; but two or three small amounts of radium bromide, of 50 milligrams each, have been brought to America, that is of the highest activity, 1,600,000 to 1,800,000. This quality only (higher if possible, certainly nothing lower) should be used for therapeutic experiments."

The medical use of radium will be confined to therapeutics, as radiographs cannot be satisfactorily made with it. A considerable number of cases have been treated here and abroad with varying success, and the same precautions as with X-ray seem indicated. From a number of cases reported from reliable sources it may be stated that radium is useful in a number of cases of skin disease, but nothing definite can be said of it for the present.

Considering the prefatory remarks to this paper, regarding the ignorance of many writers on the subject, it will perhaps not be taken amiss if we point out to the writer several slight inaccuracies in the present paper, and refer him to the article by Dr. Piffard, on radio-logic misinformation in the MEDICAL NEWS, April 29, 1905. Williams will be surprised to learn that he is responsible for demonstrating that the beta and cathode rays are identical and that the gamma and X-rays are the same. It may be, as the author says, that radium is unstable in air, but as no pure specimen of radium has ever been isolated we cannot say for certain, and will thank him for his authority. That the strength of radium may be approximately determined by the penetrability of the rays is scarcely true, and as to the penetration being two inches for the purest specimens, we may say that we did not know that the radium possessed any penetrative power at all, but that the gamma rays had been demonstrated to possess a penetrating power easily discernable through twelve inches of solid iron. Regarding the statement that only specimens of 1,800,000 or stronger should be used in experiments, it is hard to see how one is to use stronger, if that is the strongest; and regarding the statement that weaker specimens should never be used at all, we may add that the most successful experimenter with radium in New York, Dr. Robert Abbe, has performed all his experiments with radium of 300,000 activity and less. Also we respectfully refer the writer to the law or equation formulated by Dr. Piffard connecting the mass activity and result of radium applications.

Measure of X-Rays.—The importance of a reliable method of measuring the X-rays needs no argument, in view of the multiplicity of attempts made to devise such a method since the general adoption of the X-ray in medical science. MILTON FRANKLIN (*N. Y. Med. Jour. and Phil. Med. Jour.*, April 22, 1905) presents a special form of electroscope for this purpose. The X-rays ionize air or other gases through which they pass, rendering them conductors of electricity, and a measure of the quantity of electricity transmitted through a given mass of air under a given pressure will accurately indicate the activity of the ray causing the ionization. The method is substantially analagous to that used for the purpose of measuring the radio-activity of the radio-active elements. In order that the results obtained by different observers at different times be comparable, it is absolutely essential that the electroscopes be identical in dimensions as well as in design. Some form of static electrometer might be used, but the complexity of the instrument and skill required in its manipulation debar it from general use. With a specially designed electroscope of the gold leaf pattern, on the other hand, the whole process of measurement may be completed by anyone in the space of thirty seconds. Variations in the condition of the atmosphere are provided against by the introduction of a dryer in the air chamber, which is sealed. Absorption in the atmosphere is compensated for by placing the instrument at the exact distance from the tube at which it is desired to utilize the rays.

An Instance of Staphlococcic Infection of the Tonsil Simulating a Chancre.—D. W. MONTGOMERY (*Jour. of Cutaneous Dis.*, May, 1905) states that in the diagnosis of chancre in its usual situations, the danger lies in mistaking lesions that are not chancre for chancre, while on the contrary, when chancre occurs in an unusual situation the danger lies in considering it to be some other affection. The author states that in the diagnosis of chancre of the tonsil the following possibilities to error may be found. The lesion is most frequently taken for a simple tonsillitis, or grippe, or a staphylococcic or a streptococcic sore throat. The next most frequent error is supposed to be diphtheria. It is sometimes mistaken for a mucous patch or an epithelioma.

Gonorrheal Pleurisy.—While gonorrheal pleurisy is not so frequent a complication of gonorrheal urethritis as rheumatism and cardiovascular affections, due to the same agent, yet that it is occasionally seen

is shown by LEMOINE and GALLDIS in (*Revue Pratique des Maladies des Organes Génito-Urinaires*, No. 7, March 1, 1905), who report a series of cases. Ten cases are reported in which pleurisy followed an urethral discharge, accompanied in many instances by arthritis, endocarditis and pericarditis. It is to be regretted that no bacteriological examinations were made in these cases, but as the authors were competent observers, who eliminated rheumatism and tuberculosis, the diagnosis is very probable. Dr. Mazza reports the case of a girl of eleven years who had a gonorrheal discharge which was followed by polyarthritis, endocarditis, pericarditis and double pleurisy. In the pleural exudate were leucocytes, endothelial cells and diplococci. Pure cultures of gonococci developed in cultures of agar and blood serum from the pleural fluid. Bertrand's case was taken with pain in the side some days after the appearance of a gonorrheal discharge. Signs of effusion prompted thoracentesis. Fluid was obtained and at the end of aspiration a deposit was withdrawn. Cultures were negative, but the deposit showed by Gram's stain organisms which corresponded with gonococci in their morphology. Cardile's case was that of a young woman who contracted gonorrhea from her husband. Later a pleurisy developed, which lasted two months, without other symptoms. By centrifugalizing the pleural fluid gonococci were demonstrated alone; later they were found associated with another diplococcus. Jicinisky reported a case supposed to be tuberculous pleurisy. A more careful history showed that the patient had had an urethral discharge some months before. Examination of the sputum showed almost nothing but gonococci, and a few days later gonorrheal epididymitis lighted up. Fisher mentions the case of a man twenty-six years old who had had gonorrheal urethritis four years previously, from which time the discharge had been constant. He was suddenly taken with pleurisy, and in his sputum gonococci were present, but no tubercle bacilli. Lemoine and Bombart add another case where gonococci were demonstrated in the pleural effusion. Male, aged thirty years, had gonorrheal urethritis in July, 1896, which was neglected and lasted several months. February, 1897, the patient was taken with pain in the left side of the chest. March 25, 1897, aspiration was performed and fluid withdrawn. It was necessary to aspirate often, and by the end of August, 1897, twenty-five liters had been withdrawn. The pleural fluid showed gonococci in pure culture. A rib was resected to afford better drainage, but the patient sank steadily and died November 21, 1897. In these sixteen cases reported, four were of gonorrheal origin without doubt, as the organisms were found in the pleural fluid. These cases show that the pleurisy may come on with the urethral discharge or be delayed as long as four years. Next the question arises as to how the gonococcus reaches the pleura. The authors think that the most probable avenue of transfer is the blood, since the gonococci have frequently been found in the blood. There are various other suppositions as to the course of the complications of gonorrhea, such as that it is due to toxin or secondary infection or mixed infection, but these theories must give way to the actual finding of the organism.

Ethyl Chloride in the Treatment of Zoster.—To relieve the discomfort and pain which is one of the prominent symptoms of zoster, MORROW (*Jour. of Cutaneous Dis.*, April, 1905) recommends the use of ethyl chloride, acting as a counterirritant. It is used as follows: An area the size of a silver dollar is frozen at a point where the nerve emerges from the spinal column. While this usually relieves the pain along the entire nerve, it is better to freeze areas where the pain is localized. Generally this treatment relieves the pain for a day or more, but in some cases only for a few hours. When this is the case there is no objection to using the ethyl chloride frequently. He reports its use following its successful application upon ten cases.

Ringworm of the Scalp Cured by the X-Ray.—The chief reason why ringworm of the scalp is so obstinate to treatment is shown by SABOURAUD and NOIRÉ (*La Presse Med.*, 1904, page 825) to be due to the inability of the various antiseptic preparations employed to penetrate to a sufficient depth to act efficiently, as the root of the hair is inaccessible to external antiseptics. The authors have experimented considerably with microbe toxins and the salts of thallium, with the view of temporarily suspending the functions of the hair papilla. They finally arrived at a solution of the problem by the use of the X-ray, and have had very favorable results. On account of the numerous accidents and permanent alopecia which have followed the use of the X-ray in the hands of many operators, the method as given by Sabouraud and Noiré is particularly to be emphasized. The main point in their technic for the employment of radiotherapy consists in the use of the radiometer of Sabouraud and Noiré. This consists of a circular wafer of paper coated with an emulsion of platino-cyanide of barium in a collodion of amyl-acetate, and has the property of changing color under the action of X-rays in proportion to the quantity of rays absorbed. By comparison of an exposed wafer with a scale of colors it becomes easy to determine the exact amount of exposure necessary to produce a complete depilation without any of the attendant dangers of permanent alopecia. The technic of treatment is as follows: To cure a patch of ringworm of the scalp by the X-ray, place the patch at a distance of 15 centimeters from the center of the focus tube and place at the same time a disc of platino-cyanide of borium paper 8 centimeters from the center of the tube. When this disc has taken the color corresponding to the tint "B" of Sabouraud's radiometer, the operation is terminated. About seven days after the treatment a slight erythema results, and in about fifteen days the hair falls out. Cultures show that the fungus is not destroyed, so consequently, to prevent reinfection, the scalp is thoroughly anointed with an ointment containing oil of cade, the following morning the head is carefully shampooed and a weak solution of tincture of iodine rubbed over the entire scalp. A careful examination at the end of thirty days is made to show that no diseased hairs have escaped. The cure requires about three months, and last year over 327 cases of cures followed this form of treatment.

Changes in the Nails After Acute Diseases.—These are perhaps more common, especially after infectious diseases, than would appear from the scattered references in the literature. EGER (*Berl. klin. Woch.*, May 15, 1905) describes three typical cases in which such changes were observed coming on during convalescence—these were multiple neuritis, typhoid and toxic gastro-enteritis. The effects are usually most marked on the thumbs, less so on the other

fingers and toes, and consist of white spots or transverse furrows, in front of which the nail is very brittle and scaly. This condition appears as the nail is pushed forward into view by the growth of the matrix, and is probably the result of defective nutrition during the course of the illness. The ridge which appears back of the groove is most likely due to a new proliferative process which begins as the general disease subsides, and expresses an effort to get rid of the dead portion of the nail.

OBSTETRICS AND GYNECOLOGY.

Uterine Fibroids.—J. WESLEY BOVÉE (*Journal A. M. A.*, May 27), says that his former publication on the appendages was the only publication in the literature on the subject except the report of a case by Hey Groves and some incidental references in other articles. He republishes here his own four cases and that of Dr. Groves. Such occurrences throw serious doubt on the theory of the efficiency of the removal of the appendages to produce atrophy of existing fibroids, which has been accepted to a considerable extent in Europe and in this country. The possibility of the growths having existed in an undeveloped state before the ablation is admitted, but not considered probable, as is also that of pelvic adhesions acting as a casual factor. That an infectious process of some degree or variety in the uterus may bring about this fibroid degeneration is deemed by the author as highly probable, though problematic. The only adequate theory he finds on which to base a cause for the development of fibroid after double salpingo-oophorectomy is that of the endarteritis noted by Benckeiser, but Bovée wishes the relation was clearer and better substantiated by cases. Such development of fibroids after castration is probably rare, and due to some infrequent cause like this endarteritis obliterans. In the absence of a better explanation he is therefore inclined to accept this one.

Two Cases of Congenital Anomalies of the Female Genital Tract.—G. M. BRILKNER (*St. Louis Med. Rev.*, May 27, 1905) reports two very interesting congenital anamolies of the genital tract, namely, an imperforate hymen causing hematometra and hematocolpos, and a case of atresia vaginæ totalis, with absence of the uterus. The author states that opinion is still divided as to whether or not the development of the hymen is of ectodermal origin. The following-out process, which the solid Müllerian cord undergoes to form the hollow vagina does not extend to the hymen, which, in the normal instance, bears at some parts of its area, a perforation. This he considers as an extension or continuation of the procedure by which the Müllerian duct becomes converted into a series of hollow tubes—tubes, uterus and vagina.

Cæsarean Section in Myasthenia Gravis.—Myasthenia gravis is characterized by a variable degree of weakness of some or all of the voluntary muscles. After prolonged rest these muscles may respond to the will, but rapidly become exhausted again. Facial paresis and ophthalmoplegia give a characteistic appearance, there is no muscular atrophy or reaction of degeneration. The muscles most used are first affected. The sexes are equally attacked, the symptoms following some previous affection, such as influenza, the exanthemata, emotional excitement or over exertion, and in women, menstruation and pregnancy. Sensory symptoms are absent, the prognosis is grave, death occurring in most cases without any pathological structural changes. J. E. GEMMELL (*Jour. Obstet. and Gyn. Brit. Emp.*, April, 1905) has reported a case of pregnancy in which the patient showed marked weakness, being able only to walk but ten yards with a slow waddling gait. Knee jerks, ankle jerks, and plantar reflexes were normal. The lips could not be closed, attempts at smiling gave rise to the "nasal snarl" appearance. There was marked weakness of the palate muscles, thickened speech and occasional regurgitation of fluids through the nose. Sight and eye-reflexes were normal, but the orbital muscles shared in the general weakness. The symptoms became progressively worse as pregnancy advanced. Owing to weakness of the respiratory muscles increasing dyspnea became alarming, and Cæsarian section was resorted to shortly before term as the best procedure for a speedy termination of the pregnancy. The child was a healthy female. There was gradual improvement during the puerperium, but after six weeks' treatment with strychnine she was still quite helpless. Sections of uterine and rectus abdominis muscles showed no pathological conditions.

Vaginal Cleanliness.—The question of the preliminary cleansing of the vagina on the morbidity of the puerperium, is discussed by F. AHLFELD (*Zeitschr. f. Geb. u. Gyn.*, Vol 54, No. 1). He bases his conclusions on statistical and bacteriological investigations. Three per cent. solutions of cresol were employed for the irrigations, and he absolutely denies that any disinfectant effect can be obtained with the one per cent. solution. The average number of cases in which no rise of temperature occurred during the puerperium was usually about 68 per cent., while during the two years in which no irrigations were employed this number sank to about 53 per cent. In the operative cases, in which the cleansing was more complete and thorough, the number of cases in which no fever was present was even greater than the average. In a number of instances in which streptococci were demonstrated in the vagina before douching, a marked decrease in the quantity of growing organisms was noticed within a few hours after the irrigation had been given. The writer claims that if such a procedure is attended by the good results mentioned, there is no reason why it should not be employed, provided that it is not attended by any harmful results, and he does not believe that such occurs in the method advocated.

After Results of the Bossi Method.—This procedure has met with much opposition among a number of obstetricians and Bardeleben declaims very strongly against it, basing his statements on a series of six cases thus delivered. LICHTENSTEIN (*Archiv. f. Gyn.*, Vol. 75, No. 1) attacks this criticism, claiming that the number of cases was too small to serve as a criterion, that the resulting tears were not necessarily due to the instrument, and the after effects on the patients were severe because the tears were not immediately sutured as recommended. Lichtenstein had the opportunity of observing 18 cases, in which the Bossi instrument had been used. In all cases no tears resulted and the women were practically without symptoms. Of the remaining cases, four presented small tears; two, large ones, and the remaining one a bilateral laceration. Interference with conception and subsequent pregnancy could not be proven. No one, the author thinks, would question at the present time, the wisdom of employing forceps, the cranioclast, or perforation when necessity demands them, and similarly he thinks the time is

not far distant when a rapid means of mechanical dilatation will likewise be adopted. The main considerations remain—a definite indication, patience, time, and the proper instrument, such as the perfected dilator of Bossi, or that of de Seigneux.

EYE, EAR, NOSE AND THROAT.

Convergent Strabismus or Squint and the Modern Method of Treating It.—In a review of this subject T. A. WOODRUFF (*Chicago Med. Rec.*, June 17, 1905) states that in a large majority of cases the visual acuity of the eye that squints is defective at birth, and the brain, perceiving an indistinct and blurred image in its endeavor to use both eyes together, and get binocular single vision, suppresses the image in the squinting eye. The defective eye, thus left to its own resources, has a tendency to deviate from the primary position. From this fact alone one can see the necessity of beginning treatment in the first stages, if a successful issue is desired. It is during the developmental stage of the visual apparatus that much good can be accomplished in remedying the defect and getting parallelism of the visual axes, and it is during this stage that a large proportion of the cases can be cured without the necessity of submitting to operative procedure. The successful treatment of convergent squint depends upon several factors: (1) The beginning of treatment in the earliest stage; (2) the restoration of binocular vision; (3) the improvement of the visual acuity in one or both eyes and correction of the hypermetropia, thereby relieving the accommodation and reducing the excess of convergence; (4) the development of the power of fusion; (5) the establishment of binocular single vision. The accomplishment of these can be best obtained by means of the following: (1) The correction of errors of refraction and improvement of vision; (2) the education of binocular single vision by means of the stereoscope and the amblyoscope before the fifth year, and (3) operative measures. If the deviation is not more than 20 degrees, a free tenotomy of one internal rectus or advancement of one external rectus without tenotomy of the internus is usually sufficient. Where the convergence exceeds 20 degrees an advancement of the external rectus with tenotomy of the internal will probably be necessary.

The Value of Protargol in the Treatment of Gonorrheal Conjunctivitis.—On account of the destructive action the gonococcus exerts upon the eye, not only in the infant, but also in the adult, efforts have been made from time to time to secure a thoroughly reliable and efficient germicide which, in the hands of all practitioners, can be used with absolute safety. F. C. HOTZ (*Chicago Med. Rec.*, April, 1905) recommends protargol, which, while possessing almost as great germicidal properties as silver nitrate, is free from the undesirable properties of the latter. He recommends a 20 per cent. solution as being most efficient. In order to obtain a perfect and thorough contact of the solution with every part of the inflamed conjunctiva the author saturates the cotton of an applicator with the solution, lifts the upper lid from the eyeball, slips the applicator between the lid and the eyeball, to the retrotarsal fold, and passes it over this fold from the outer to the inner canthus and back several times, thus, as it were, rubbing the protargol thoroughly into the conjunctiva. Another application is then used to treat the lower fornix and palpebral conjunctiva in the same way. The 20 per cent. solution is applied twice daily until the discharge is greatly reduced, has lost its purulent character and contains no more cocci. During the intervals between the applications the lids should be cleansed as often as necessary to prevent the discharge from crusting up the lid margins. Fresh solutions only should be used. This treatment is so simple and safe that any physician can carry it out, and therefore it is to be hoped that it will be adopted by the practitioner who sees the purulent ophthalmia of infants in the early stage more frequently than the specialist, and therefore is in a position to rescue many a child from blindness by the early and proper treatment.

Radiotherapy in Trachoma.—At the beginning of this year Cohn, of Breslau, reported seven cases of trachoma and follicular conjunctivitis treated successfully by radium, the action of which he defined as "cito, tuto et jucunde." SELENEVSKY (*Roussky Varach*, May 14, 1905) finds a theoretical basis for the success obtained, inasmuch as it is assured by several investigators that the beneficial effect of radium on malignant growths is due to its power to decompose the lecithin which forms a substantial element of these growths. As the granulations of trachoma also contain a certain percentage of this substance the effect thereon of radium becomes intelligible. The author picked out seven trachomatous cases of a most pronounced character; the amount of radium used was at first 1 mg., and later 10 mg.; time of exposure five to ten minutes. The tube containing the radium was simply applied over the area treated and slowly moved about without touching the surface. The results were really astonishing: Five of the seven eyes were entirely cured, the other two are in a fair way of becoming so. The absorption of the granules was not accompanied by any untoward effect. The number of sittings varied from eight to fourteen. The author firmly believes that even in cases where the granules are extensive, good results can be obtained with radium, and that the treatment when properly conducted is perfectly harmless.

The Operative Treatment of Empyema of the Antrum of Highmore.—OTTO T. FREER (*Chicago Med. Rec.*, July, 1905), after carefully reviewing the Küster operation through the facial wall; the Maiborn-Cooper operation, through the alveolar process; the Caldwell-Luc operation, through the nasal wall; the Mikulicz operation, under the inferior turbinate, and the operation through the middle meatus for empyema of the antrum of Highmore, considers that for the acute, subacute and milder chronic cases the internasal operation through the middle meatus is undoubtedly the best method, for it is easy of performance, inflicts but trifling injury, leaves the nasal interior practically intact and avoids the formidable operation through the facial walls. When the suppuration is marked with much foul discharge, or where the long duration of the disease leads to a suspicion of marked degeneration of the mucous lining of the antrum, the nasal removal of nearly the entire nasal wall is indicated, these being the operations of Rethi and Clavue. These operations the author considers that in the great majority of cases result in a cure and does everything for the patient that may be obtained from even the most radical Caldwell-Luc procedure, and with far less traumatism. It is no bar to a later operation through the facial wall, should it become necessary, and has the advantage that it represents the last and most advantageous step of the Caldwell-Luc operation, without its preliminary mutilation of the facial wall and mouth.

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RECENT THERAPEUTIC APPLICATIONS OF SEA-WATER.

FROM time immemorial the philosophic mind has sought to penetrate the manifold mysteries of the deep. As one by one its living treasures have come within the close scrutiny of science, the boundless ocean begins to be recognized as the cradle of life, as the original source of the vast organic hierarchy of the earth. In the countless eons during which the sea was the sole environment of protoplasm, there must have developed an intimate and causal relationship between the physical and chemical characteristics of the sea-water and the complex constitution of the primary physical basis of life. Only within the last few years have these relationships been carefully studied, and the results, taken in connection with certain familiar clinical experiences, suggest a rich mine of possibilities in the healing art.

That sea-bathing has a unique therapeutic value in many morbid conditions has been abundantly demonstrated. Very little, however, has been known about the manner in which a dip in the ocean has a favorable effect on the organism. There is practically no cutaneous absorption of any of the saline constituents of the water. The good effects have been attributed to the physical action of the waves, the exercise, the fresh air with its large content in ozone, and the force of the winds. An actual investigation of the effect of sea-bathing and sea-climate upon metabolism has been made by A. Loewy and F. Müller (*Pflüger's Archiv*, July 9, 1904). They found that west winds and an increased force of the waves augment the bodily metabolism. The stimulation of the latter goes hand in hand with the stimulation of appetite, digestion, and psychic functions, and is of reflex origin, the stimuli being various physical factors, such as lower temperature, movements of the air, etc. In the light of other recent researches on the effects of the internal administration of sea-water, it is quite probable that part of the favorable effects of ocean-bathing is to be attributed to the water that is occasionally swallowed.

There is sufficient evidence at hand to support the belief that sea-water has active therapeutic virtues and that these are due to its chemical composition. There has been a nebulous idea in the minds of the laity that skin diseases are favorably influenced by sea-bathing. This conclusion has been crystallized in the observations of R. Abrahams (MEDICAL NEWS, March 26, 1904), who reports the good and prompt effects of a course of sea-baths on many forms of chronic cutaneous disease, particularly pityriasis versicolor, herpes tonsurans, chronic eczema, and pruritus senilis. Since some of these conditions are of parasitic origin, one can readily associate the good effects with the antiseptic qualities of the water.

That sea-water actually possesses germicidal power has been proved bacteriologically and clinically. In the gynecological service of Dr. Leblond at Saint-Lazare, M. Legourd (*Report de Therap.*, Feb., 1905) has discovered a valuable antiseptic power in sea-water, which has undergone electrolysis, and which is termed "hermetin." It is non-toxic and neutral, and contains oxygenated compounds of chlorine in a nascent state. It has produced favorable results in the treatment of affections of the vulva, vagina, and uterus.

Within the past few years the fact has been definitely established that under no other conditions are the various lesions of surgical tuberculosis so favorably influenced as by a residence at the seashore. That the beneficial effects are due not simply to the pure air is proved by the fact that these cases do not get along so well in the country. That the saline constituents of the

atmospheric moisture are responsible for this curative power appears to be indicated by the following interesting experiences.

MM. Robert-Simon and René Quinton (*Gazette des Hopitaux*, June 22, 1905) report their results in the treatment of eighteen cases of tuberculosis by means of subcutaneous injections of sea-water. The latter was made isotonic with the blood, *i.e.*, having the same saline concentration. This was effected by mixing 83 parts of Atlantic sea-water with 190 parts of pure drinking water. The freezing point of the mixture is the same as that of the blood—0.57°. Of the 18 cases treated, 14 were pulmonary tuberculosis. The treatment consisted in the injection, every three or four days, of 100 to 300 cubic centimeters of the above solution. In three cases no benefit was observed. In the remaining fifteen marked improvement was noted. The cough, expectoration, and night sweats diminished or disappeared entirely, sleep returned, and the appetite improved. In seven cases of pulmonary tuberculosis in the first stage, after from one to three months of treatment, there was not only a return to the normal respiratory rhythm, but also a more or less complete disappearance of the subcrepitant and crepitant râles. In three cases presenting themselves during the second stage of this disease, the treatment brought about a marked diminution in the number of moist râles, and in the expectoration. Even in the advanced stage of the disease the subcutaneous injections were followed by good effects. There were noted a total or partial healing of cavities, and a suppression of hemorrhages. One case of lupus of the nose was considerably benefited. Out of three cases of tuberculous glands, one was improved. An increase in weight was observed in all the cases that were otherwise benefited. These results are of no little interest and justify a more extensive trial of this novel method of treatment. This is also warranted on other grounds that are not purely theoretical.

In speculating upon the manner in which the injections of sea-water thus favorably affect the tuberculous process, one would naturally first think of the sodium chloride and attribute the good effects to this alone. The physiological relations of common salt have not yet been entirely worked out. Yet one of the most important discoveries recently recorded in the physiology of this substance concerns its relation to the mechanism of immunity. R. Turró and A. Pi y Suner (*Journal de Physiol.*, Jan. 15, 1905) found that the injection of large doses of saline solution into rabbits increases their resistance to the infections of malignant edema and the streptococcus. This effect is attributed to the fact that the saline solution dissolves a large amount of alexines out of the protoplasm of the cells, and adds it to the bodily fluids, thus increasing their bactericidal power. The degree of immunity depends principally upon the bacteriolytic power of the cells and humors, and this power is directly in proportion to the degree of solubility of the active substances. If a tissue contains enzymes that are but slightly soluble, its defensive power is diminished. If it is easily coagulated the defensive power is destroyed and the organism is helpless. The organism is infected by virtue of the coagulability of its plasmas, and resists infection by virtue of their solubility.

By applying the above results to the explanation of the curative value of sea-water in tuberculosis one may assume that the sodium chloride enables the alexines to be dissolved out of the cells, thus increasing the resistance of the individual.

Another explanation of the good effects of the saline injection may be gleaned from the researches of W. Ercklentz (*Zeitsch. f. klin. Med.*, Vol. 48, No. 3). This observer studied the effect of saline infusions upon the elimination of toxic substances from the organism. A number of rabbits were given subcutaneous injections of the minimal lethal doses of anilin, strychnine, arsenic, ricin, and cantharidin. As soon as the toxic symptoms appeared an intravenous saline infusion was given, with the result that the elimination of the poison was hastened. This result was attributed to an increased diuresis.

Not only laboratory experiments, but also clinical observations, attest the value of normal salt solution in various toxic conditions. H. F. Williams (MEDICAL NEWS, April 25, 1903) has reviewed this phase of the subject and has reported the good results he has himself obtained. Among the various diseases in which the intravenous or subcutaneous injection of normal salt solution has been of value are: Typhoid fever, pneumonia, dysentery, puerperal eclampsia, peritonitis, septicemia, uremia, ptomain poisoning, delirium tremens, acute digestive disorders,

cholera infantum, and other forms of toxemia. In connection with the reputed success of sea-water injections in tuberculosis, one case reported by Thompson is of interest. It was that of a tuberculous woman in whom persistent vomiting was relieved, after fruitless attempts with numerous drugs, by copious subcutaneous injections of salt water.

The expression, normal salt solution, has undergone within the past few years a definite evolution. At first .7 of one per cent. was considered to be the proper concentration of normal salt solution, but later the figure was properly raised to .9 of one per cent. Yet it is questionable whether this represents the solution which is most favorable to the physiological efficiency of the tissues. Thus Ringer's solution, containing, besides sodium chloride, other salts, notably calcium chloride, represents more nearly the normal physiological environment of the cells. In fact, as recent researches have shown, a pure solution of sodium chloride is relatively toxic to the bodily units. Thus Jacques Loeb (*Pflüger's Archiv*, March 28, 1905) has shown that the recently fertilized egg of *Fundulus* develops both in distilled water and in sea-water, but if brought into a salt solution having the same concentration in which salt is present in sea-water it quickly dies. But if to the salt water be added a small quantity of a salt of a bivalent metal, even such poisonous compounds as $BaCl_2$, $ZnSO_4$, etc., the latter will allow the embryo to develop. The young *Fundulus*, which has just hatched from the egg, can live for quite a long time in distilled water or in sea-water, but it will quickly die in a pure solution of common salt. This toxic action may be inhibited by the addition of $CaCl_2$+KCl. Either of these alone is not sufficient for this purpose.

This and other researches of Loeb, and the investigations of Matthews, Fischer and others, have shown that the solution which is most favorable to the life of the tissues is one which contains a number of salts, and these in the same concentration in which they exist in sea-water. The excess, deficiency or removal of one or more of these salts disturbs the equilibrium of the solution, which becomes toxic for the animal cell. The practical application of this fact is obvious. The normal salt solution of the future will be one having practically the same composition as sea-water, if not sea-water itself.

It is easy to explain the reason for this predilection of the animal cell for an environment having the same saline content and concentration as the water of the ocean. During the dawn of life all cells lived amid this environment, and the chemical and physical structure of protoplasm became adapted to the chemical and physical characteristics of the surrounding medium. In spite of the enormous lapse of time, and the complex elaboration of the simple protoplasmic units into the higher animal forms, the former still retain the ingrained habits of their primitive life.

INJURIES TO THE SPINAL CORD.

SEVERE traumatisms to the spinal cord, from simple shock to complete severance, are daily becoming more frequent. A broken back was once a rarity, and considered perforce to be immediately fatal; to-day it is almost a commonplace, and while not deprived of its most distressingly serious nature, yet its careful treatment may insure a high degree of comfort to the sufferer.

The occasion does not permit of a complete summary of the present attitude toward the minor and major grades of traumatic injury to the spinal cord, yet certain facts have of recent years been brought to the fore which might be advantageously discussed.

Severe injuries, as fracture or dislocation in the cervical region, have been found to be almost universally extremely grave. If death does not immediately follow the accident, the resultant hemorrhage, inflammation or redisplacement is usually fatal.

A strikingly unique injury is reported by James A. Kelly (*Annals of Surgery*, August, 1905), in which there was a forward dislocation of the atlas with recovery. The factor that saved this patient's life was a coincident fracture of the odontoid process of the axis, which, being carried forward by the transverse ligament, prevented the transfixion of the medulla. It is further noteworthy that, notwithstanding the verification of the diagnosis by excellent X-ray pictures, no pressure symptoms developed for a long time after the injury, and that the patient was able to take up his work as a laborer without distress, in spite of a permanent change in the position of head and neck.

From another point of view serious difficulties in definite diagnosis of severe cord injuries are emphasized by the studies of A. Fickler (*Deutsche Zeitschrift für Nervenheilkunde*, Vol.

29, Heft 102), who shows that in lower animals following experimental traumatisms, applied directly to the exposed spinal cord, not as in the experiments of Schmaus, Kirchgässer and others who made crushing blows on the outside of the vertebral column, there may be a true motor paralysis below the site of application of the trauma without any injury to the cord that can be macroscopically or microscopically demonstrated.

Such paralysis might be temporary only. The partial protection afforded by the muscles, spinal column, veins and fatty tissue, together with the dura is considerable. The same clinical picture can be produced experimentally in animals. The concussion imparted to the cord is a swinging movement. The paralysis is not the result merely of the concussion, but is the result of the mildest form of contusion of the cord; the resulting total paralysis, and the rapid recovery from the same are to be explained on the basis of variations in the axis cylinder, and not of molecular alterations. The lesion in the cord is circumscribed, and more marked at the point of contrecoup than at the point of application of violence. If the place of contrecoup is at the foramen magnum, then a lesion of the cord does not occur.

Apart from the localities of coup and contrecoup, the extent of contusion is also determined by the varying consistency of the cord itself. The motion imparted to the cord by a blow is transmitted chiefly in the direction of the blow through the cord, losing in intensity as it proceeds from the point of impact; small waves also start medially from this point; the amount of contusion is proportional to the degree of trauma, the distance from its point of application and the resistance offered by the nervous tissue elements. The least resistant tissue is the nervous tissue; the blood vessels are the most resistant. Only in the case of opening up of the central canal does a flow of lymph play a destructive rôle. Central hemorrhage occurs only with a damage of the nervous tissue, and only when the central veins are in the direction of the line of injury. Thrombosis has little to do with the genesis of traumatic lesions of the cord. The vascular changes appear to cause only late forms of spinal apoplexy.

In view of the recent striking cases of possible regeneration after cord injury, as reported by Harte and Fowler, the result of Fickler's studies of the process of regeneration in the spinal cord is of more than passing moment. He says that the regenerative phenomena following experimental lesions of the cord in animals are not as marked as those following compression of the cord in human beings. Section of the white substance between the anterior horns and the periphery is followed by regeneration of nerve fibers above and below the plane of section. A regeneration of ganglion cells in the cord has not yet been observed. Regeneration of the nerve fibers occurs in many diseases of the cord; whether the disease has already run its course or whether it is slowly developing; it occurs in traumatisms, compressions, syringomyelia and in transverse and disseminated myelitis. It does not occur in the columnar degenerations and in multiple sclerosis.

In order that regeneration may occur, it is necessary that the ganglion cell shall be intact. The first evidence of regeneration is seen one week after the section, and the process advances slowly. Only a comparatively small number of fibers are restored. The functional result is not a very considerable one. The best conditions for a restoration of function in the anterior part of the cord are afforded by compression which, leaves intact the central veins and the general configuration of the cord. A regeneration proceeding from the compression of the posterior roots has not yet been found, and probably does not occur, since the cause of injury of the cord is usually a caries of the vertebræ, which causes tuberculous ulceration of the ganglia of the posterior roots, in which case no regeneration can occur.

ECHOES AND NEWS.

NEW YORK.

New York and New England Association of Railway Surgeons.—The fifteenth annual meeting of this Association will be held at the Academy of Medicine, New York City, November 17 and 18, 1905, under the presidency of Dr. G. P. Conn, of Concord, N. H. One half day of the meeting will be devoted to a symposium on "Injuries to the Head and Spine." Noted surgeons will take part in the discussion. A cordial invitation is extended to the profession.

Medical Department of Fordham University.—The new medical department of this institution will open on September 28, with the following faculty: Anatomy, George A. Leitner; physiology and hygiene, E. Franklin Smith; materia medica and theraputics, Thomas J. Dunn and James N. Butler; chemistry and physics, taught at St. John's College; obstetrics and gynecology, John Aspell and George M. Edebohls; neurology and historical medicine, James J. Walsh. As only first year work is to be undertaken during the present session the full roster of professors is withheld for the time being. Dr. James N. Butler is Dean of the Faculty.

PHILADELPHIA.

Smallpox Epidemic.—Orwin, Pa., a small village near Pottsville, is now suffering with an epidemic of smallpox. The court of the last-named place has appointed Isaac Brown sanitary agent of Porter township, where the disease runs rife.

Enteric Fever Designated as Contagious.—Acting in accordance with the decision reached by the health experts at Washington, D. C., the Bureau of Health will hereafter classify typhoid fever among the contagious maladies. While the houses in which such diseases occur will not be placarded it is to be hoped the mere classification will impress the caretakers of the patient sufficiently to prevent its spread. Perhaps then the mothers and others caring for typhoid patients will better observe the rules of cleanliness and will institute disinfection and fumigation.

Pathogenic Bacteria Found in the Conduits Connected With the Filter Plants.—In a recent letter to the Mayor, Major Gillette, chairman of the commission of experts, pointed out that the daily reports made of the filter during the construction of the conduits show that the *Bacillus coli communis* was found in one place. The writer suggested that the conduits be pumped out in order to determine whether or not the bacteria passed through the filter. It is estimated that in order to accomplish this work four months' time and between $35,000 and $40,000 would be required.

Philadelphia Physicians to Attend the Tuberculosis Congress.—The steamer St. Louis, sailing on September 16th, will have on board Drs. Flick, Walsh, McCarthy and Ravenel; this quartet will attend the Third International Congress on Tubeculosis which will be held in Paris, October 2d to the 7th. Dr. Flick will read one paper on the "Prognosis of Tuberculosis" and another on the "Work of the Phipp's Institute." Dr. Walsh will speak of the "Work of the White Haven Sanitarium" and will read a paper on the "Kidneys in Tuberculosis." Dr. McCarthy will read a paper on the "Changes in the Brain and Nervous System in Tuberculosis." Dr. Ravenel is the American reporter of the Congress.

Indefinite Medical Terms Not Acceptable.—Acting in accordance with the new State law passed by the last Legislature the Pottsville Board of Health will see to it that the law is enforced in its realm and that if any physician fails to abide by it he will be punished. This Board of Health has determined that no undertaker will be given a burial permit who holds a certificate of death with such terms as "heart disease," "accident," "kidney disease," "blood poisoning," "breaking down," as causes of death. If such terms can be avoided and the definite cause of death be given statistics can then be compiled which will be of great value to the scientific medical man. This, however, is not the only advantage of the edict. It will insure an exact diagnosis from the physician who makes visit after visit without studying his cases sufficiently to give him the faintest clue to the nature of the disease present. As matters stand he finds it much easier to flatter the family and concoct some tale which will satisfy them.

Crusade Against Malpractitioners.—The postal inspectators have begun a war upon fakers and malpractitioners and have already held several under bail to wait trial. Inspector Malone has communicated with various "remedy companies" and "confidential doctors," the replies to these letters will be held as evidence against the prisoners. Among the arrested are Thomas Wallace, alias Dr. White, 120 North Ninth Street; Mrs. J. Bright, alias "Dr. Revere," 1102 Mt. Vernon Street; Julius Neblau, alias "Dr. Gordon," "Dr. French," "Dr. Neblau." Of the last named individual Mrs. Bell formerly employed by Neblau testified he was "doctor" anything and anybody as the request might have been. It was she who prepared a registered letter designed to capture Neblau. Coroner Dugan, who carried on a similar campaign against these people last year is now working in conjunction with the postal inspectors. He said that he alone is powerless to attack the fakers, because they do not come under his jurisdiction until they are responsible for some death.

Medical Inspector's Duty.—The systematic work of each school inspector has been clearly defined. He will make daily visits to schools allotted to him and inspect pupils that are set aside by the principal as bearing evidence of being ill. Each day he will examine and make a record of all the pupils, whether ill or not, in one school. This he will continue until all the pupils in his district are examined. He will exclude from school every child suffering from acute disease, whether contagious or not, any form of disease that may be a menace to other children, any form of disease of sufficient gravity to impede the work of the child, and any pupil not presenting evidence of successful vaccination, notwithstanding the certificate the pupil may hold. When a child has been excluded from school the inspector shall call at the home to determine whether or not the pupil is receiving medical attention; if not the case shall be reported to the chief medical inspector. As elicited from the systematic examination the actual number and percentage of children suffering with the following diseases shall be reported to the chief medical inspector: Myopia, hyperopia, strabismus, astigmatism; defects of hearing; spinal curvature, flat foot; acute and epidemic conjunctivitis, obstruction of the lacrymal duct, trachoma; diphtheria, tonsillitis, adenoids; impetigo, eruptions, itch, eczema; phthisis, asthma, bronchitis, rickets, scurvy, scabies or parasitic diseases of the scalp.

Program of Meeting of the Medical Society of the State of Pennsylvania.—The regular annual meeting will be held at Scranton on September 26 to 28, 1905. The morning session of the first day will be devoted to the reports of officers, committees, etc., which will be followed by the program as given below. "Address in Medicine," by S. Solis Cohen, Philadelphia. "The Diagnosis of Pneumonia and Empyema in Children," by Alfred Hand, of Philadelphia; "The Adaptation of the Public to the Principles and Practice of the Prevention of Tuberculosis," by Howard S. Anders, of Philadelphia; "The Diagnosis of Incipient Tuberculosis," by George W. Norris, of Philadelphia; "The Sanatorium Treatment of Tuberculosis," by George A. Kolb, of Erie; "Open Air vs. Confinement in the Treatment of Bone Tuberculosis," by H. Augustus Wilson, of Philadelphia. "Address in Surgery," by Jonathan M. Wainwright, of Scranton; "The Results of Surgical Treatment in Exophthalmic Goiter," by B. Farquhar Curtis, of New York; "Observations on Cancer of the Head and Neck With an Analysis of 110 Operative Cases," by George W. Crile, of Cleveland, Ohio; "Focal Diagnosis of Operable Tumors of the Cerebrum," by Charles K. Mills, of Philadelphia; "Surgery in Relation to Operable Lesions of the Cerebrum," by Charles H. Frazier, of Philadelphia; "The Treat-

of Trifacial Neuralgia by Complete Avulsion of the Peripheral Branches of the Trigeminal Nerve," by Ernest La Place, of Philadelphia; "The Essentials of Successful Roentgen Therapy," by Charles Lester Leonard, of Philadelphia; "The Adjustment of Radiation for Various Physiological Effects," by Russell H. Boggs, of Pittsburg.

Second Day.—"Address in Neurology," by E. E. Mayer, of Pittsburg; "Herpes Zoster Exophthalmicus," by Edward Stieren, of Pittsburg; "The Practical Value of Some Old Remedies," by John V. Shoemaker, of Philadelphia; "Some Color Comparisons in Medicine," by Henry E. Wetherill, of Philadelphia; "Insanity in the Aged," by Charles W. Burr, of Philadelphia; "Report of Diaphragmatic Hernia with Complete Extrusion of Stomach and Spleen," by J. Bruce McCreary, of Shippensburg; "Address in Otology," by Michael V. Ball, of Warren; "Thyrotomy vs. Laryngectomy, Notes on the Frequently Malign Nature of Chronic Hoarseness," by Chevalier Q. Jackson, of Pittsburg; "The Present Treatment of Squint," by William Campbell Posey, of Philadelphia; "The Mastoid Operation," by Edward B. Dench, of New York City; "Mastoiditis, Its Importance in Practice," by S. Makuen Smith, of Philadelphia; "The Subcutaneous Resection of the Septum," by William L. Ballenger, of Chicago; "Acute and Chronic Inflammation of the Accessory Sinuses of the Nose," by W. G. B. Harland, of Philadelphia; "Can the Deaf Child Be Taught to Hear," by G. Hudson Makuen, of Philadelphia; 'Address in Hygiene and State Medicine," by George W. Wagoner, of Johnstown; "Protective Inoculation Against Typhoid Fever," by H. Bergey, of Philadelphia; "Typhoid Fever," by Seneca Egbert, of Philadelphia; "Pernicious Anemia," by J. A. Lichty, of Pittsburg; "Chronic Rheumatism," by Charles F. Painter, of Boston; "The Differential Value of Blood Cultures," by David L. Edsall, of Philadelphia; "Address in Obstetrics," by Ella B. Everett, of Philadelphia; "Estopic Gestation," by Charles P. Noble, of Philadelphia; "Uterine Curettage—Its Indications and Contradictions—Its Technic and the Complications Which May Attend and Follow the Procedure and Their Proper Treatment," by E. E. Montgomery, of Philadelphia; "Pseudomyoma Peritonei," by Barton Cooke Hirst, of Philadelphia; "The Significance and Management of Chronic Uterine Hemorrhage," by George E. Shoemaker, of Philadelphia; "The Technic Employed in the Last One Hundred Laparotomies with a View of Restricting the Employment of Drainage," by L. Jay Hammond, of Philadelphia; "Movable Kidney," by H. D. Beyea, of Philadelphia; "Some remarks on Pulmonary Embolism, Secondary Abscesses, Toxemia, Infectious Jaundice, Intestinal Obstruction and Secondary Pertitionitis as Complications of Appendicitis," by John B. Deaver, of Philadelphia. "Appendicitis—Treatment of Septic Peritonitis," by Charles H. Ott, of Sayre; "The Management of Pus Cases in Abdominal Surgery," by Reed Burns, of Scranton; "Drainage in Septic and Infectious Peritonitis," by Joseph Price, of Philadelphia.

Third Day.—"The Office Treatment of Hemorrhoids," by W. M. Beach, of Pittsburg; "Report of a Case of Acute Myelitis of Toxic Origin," by Herman B. Allyn, of Philadelphia; "Three Cases of Meningocele that Recovered," by George W. Guthrie, of Wilkesbarre; "Additional Observations upon the Treatment of Empyema, with Special Reference to Irrigation of the Pleural Cavities," by P. Y. Eisenberg, of Norristown; "Notes on the Diagnosis of Acute Hemorrhagic Peritonitis," by J. C. Wilson, of Philadelphia; "Clinical Examination of the Feces," by J. Dutton Steele, of Philadelphia; "Brain Abcess with Sudden Exophthalmos and Blindness, Death; Autopsy;" by Edward B. Heckel, of Pittsburg; "The Early Recognition and Treatment of Intestinal Obstruction with Report of Some Unique Cases," by J. C. Bloodgood, of Baltimore; "Wandering Gallstones," by William L. Estes, of South Bethlehem; "Surgery of the Gallbladder and Ducts," by J. M. Baldy, of Philadelphia; "The Direct Fixation of Fractures," by John B. Roberts, of Philadelphia; "Fractures of the Head of the Radius," by T. Turner Thomas, of Philadelphia; "The Question of Lowered Gastric Secretion," by Charles G. Stockton, of Buffalo; "The Surgery of Non-Malignant Diseases of the Stomach," by John B. Murphy, of Chicago; "The Surgical Treatment of Cardiospasm," by Edward Martin, of Philadelphia; "The Treatment of Benign Stenosis of the Pylorus and Duodenum Resulting from Spasm and Scar Tissue and from Abdominal Adhesions," by Albert Bernheim, of Philadelphia; "The Symptomatology and Diagnosis of Cancer of the Stomach," by John J. Gilbride, of Philadelphia; "Gastroenterostomy—Its Indications and Its Technic," by William L. Rodman, of Philadelphia;; "The Conservative Treatment of Hypertrophied Prostate," by H. M. Christian, of Philadelphia.

CHICAGO.

Condemnation and Destruction of Food.—The food inspectors condemned and destroyed 88,677 pounds of meat at the Union Stockyards, including three hogs bearing the Government inspection tag. Within the loop district, the inspectors condemned and destroyed a large quantity of immature veal, rotten poultry, berries and other fruit, and 121 barrels of spoiled fish, including three barrels which were being delivered to a curing and smoking-plant.

Typhoid Fever.—Although there were twelve deaths from typhoid fever, according to the *Bulletin of the Health Department* for the week ended August 26, the laboratory examinations of suspected cases for physicians warrant the anticipation of a decline of this mortality. Out of 72 examinations, only 18 gave positive reactions to the Widal test. The disease is most prevalent in the Southeastern part of the city where the water supply is inadequate.

Health Bureau in Schools.—With a view to safeguarding children against the spread of disease and at the same time improving the sanitation of houses in the congested quarters of the city, the Board of Education of Chicago is planning the establishment of a Bureau of Health. Many of the trustees heartily favor the plan, and if enough votes can be secured in the Board, the scheme will be put to a practical test as soon as the public schools are opened for the fall term. The plan is to have the schools visited by competent medical inspectors, with a view to learning from the school children of cases of illness in their homes. As soon as information is obtained, the afflicted household will be visited, and every effort made to guard against spread of the disease and also to improve the sanitary conditions. Teachers will be requested to report all cases of illness to the Bureau and also the addresses of all houses which they have reason to know are not sanitary.

GENERAL.

The Healthy Soldier.—Out of a total of 242,183 officers and men in the British army, 183,598, or 758.1 per 1,000, were admitted to hospital in 1903, says the annual report of the Army Medical Department, issued June 10, 1905.

Only Two Cholera Cases at Hamburg.—Baron Bussche, German Chargé d'Affaires in this country, says an official telegram received from the foreign office in Berlin, states that only two cases of cholera have occured at Hamburg, and not sixty as reported.

Congress of Criminal Anthropology.—The sixth Congress of Criminal Anthropology will meet at Turin on April 28, 1906, under the presidency of Professor Lombroso. An exhibition of criminal anthropology will be held in connection with the Congress.

New Hospital for Epileptics at Moscow.—The town council of Moscow, says the *St. Petersburger Medicinische Wochenschrift*, has decided to erect at once an asylum for epileptics, for which a special fund of 700,000 rubles is at the council's disposition. The first instalment of the building will accommodate 150 patients.

Deaths of Eminent Foreign Medical Men.—The deaths of the following eminent foreign medical men are announced: Dr. Hyernaux, formerly professor of midwifery in the University of Brussels, at the age of 80 years; Dr. Josef von Metnitz, extraordinary professor of odontology in the University of Vienna, at the age of 43 years; Dr. Walter Flemming, formerly professor of anatomy in the University of Kiel, at the age of 62 years. His published researches relate to embryology and cell division.

Leprosy in Roumania.—Leprosy is said to be on the increase in Roumania. Till 1895 no special precautions were taken, the disease not being considered contagious. Since then, however, so many cases have been discovered that the authorities became alarmed, and the rebuilding of an ancient monastery at Arnota, on the sea-shore, for the interrment of lepers was resolved on. It is alleged that the prevalence of the disease has greatly increased in the districts through which the Russian forces passed in 1877-78.

Professor Goldwin Smith on Longevity.—Professor Goldwin Smith, who recently celebrated his eighty-second birthday at Toronto, when asked by a correspondent of the *Daily Chronicle* if he had any message to his fellow-men appropriate to the occasion, is reported to have delivered himself as follows: "I have the secret of longevity. I have never been abstemious, and have lived pretty much as I liked, but I have always observed moderation. In my youth in England I lived a very active life, following the hounds and mountain-climbing in Switzerland being my favorite recreations."—*Brit. Med. Jour.*

A Woman Professor of Anatomy.—Miss Florence R. Sabin has been appointed Associate Professor of Anatomy in the Johns Hopkins University. Her name is well known to anatomists by her work on the nervous system. Miss Sabin, it may be stated, is not the first woman who has been professor of anatomy. In the sixteenth century Alessandra Giovanni taught that subject at Bologna, and Anna Manzolini occupied a Chair of Anatomy in the same university in the middle of the eighteenth century. Maria Pettracina was Professor of Anatomy in the University of Ferrara toward the end of the same century. She was the author of several works on a subject which is exciting great interest at present, namely, the physical education of children.

International Congress of Anatomy.—The first International Congress of Anatomy has just been held at Geneva under the presidency of Professor Eternod. Five anatomical societies took part in the Congress, namely, the Anatomical Society of Great Britain and Ireland, the German Anatomische Gesellschaft, the Association of American Anatomists, the Unione Zoologica Italiana, and the French Association des Anatomistes. Nearly two hundred representatives of anatomy, histology and embryology were present. The scientific proceedings were of the greatest interest to specialists, and the social entertainments, official and private, were on a generous scale. It was decided that the next meeting of the Congress should be held at Bordeaux, at Eastertide, 1906, under the presidency of Professor Viault.

International Medical Congress.—Final arrangements have been perfected for the trip of the American party to the International Medical Congress at Lisbon, next spring. The party will sail April 7 on the North German Lloyd steamer "König Albert," for Gibraltar, visiting Algerciras, Seville, Cordova, etc., spend a week in Lisbon during the Congress, returning to New York on Wednesday, May 9. This trip may be made comfortably in a first-class steamer both ways, all expenses paid, including board and lodging while in Lisbon, for $300. A number of side trips are being added, and tickets will be good returning through Europe, if desired, at a slightly increased cost. All those who contemplate the trip are cordially urged to make reservation with Dr. Chas. Wood Fassett, of St. Joseph, Mo., at once, in order to secure desirable berths on the steamer and good hotel accommodations.

Foreign University Intelligence.—Berlin: Dr. Heine has been recognized as privat-docent of otology.—Bologna: Dr. Canepele, of Rome, has been recognized as privat-docent of oto-laryngology.—Breslau: Dr. Göbel has been recognized as privat-docent of surgery.—Erlangen: Dr. Erwin Kreuter has been recognized as privat-docent of surgery.—Greifswald: Dr. Sobotta, of Würzburg, has declined the chair of anatomy.—Jena: A new clinic for nervous diseases has been erected in connection with the psychiatric clinic.—Pavia: Dr. Adelchi Negri has been recognized as privat-docent of general pathology.—Pisa: Dr. Agostino Bruno has been recognized as privat-docent of internal pathology.—Rome: Dr. Angelo Chiavaro has been recognized as privat-docent of odontology.—Tübingen: Dr. Harms has been recognized as privat-docent of ophthalmology.—Vienna: Dr. Gustav von Wunscheim has been recognized as privat-docent of odontology.

Embalming in Ancient Egypt.—A recent number of the *Revue des Deux Mondes* contains an article by Professor Lortet, of Lyons, in which recent discoveries in respect to embalming in ancient Egypt are described. More than seventy yards of cloth of a width of about 12 inches were used in wrapping a mummy. This cloth was impregnated with a resinous alkaline solution, to which Professor Lortet attributes the preservation of the tissues. Ten large jars, carefully stoppered, full of a yellowish powder, have been found in a tomb near Thebes. On analysis the powder was found to contain an aromatic resinous substance and a large proportion of sodium salts, with some sand and clay. The resinous substance is evidently an extract of various aromatic substances in which myrrh predominates. Cloth dipped in water in which some of this powder was dissolved presents the same appearance and odor as the cloth in which mummies are wrapped.—*Brit. Med. Jour.*

Noted Men Among the Suicides.—A writer in a London periodical has recently compiled a list of the men of noble birth and high station who within the past

century or so have ushered themselves out of the world. The list includes Prince Ludwig, of Austria, who slew himself a few years ago because of a love affair, and Sir Hector MacDonald, the hero of the Boer War, who killed himself in Paris rather than face disgrace, and there are many others; but the list does not include the host of Chinese officials who have committed *hara-kiri* in very recent times, and often under what would be considered elsewhere as very slight provocation. There is no country in the world where self-slaughter is so common as in China, or where it is regarded so lightly. Statistics on this particular subject are unreliable, but one authority on China estimates that over twenty-five thousand persons die by their own hands in that country every year. In India suicide among the wretched victims of the child-marriage system rolls up a great total every year. Among strange motives for suicide we may include that of Lieutenant Jovanovitch, of the Servian army, who killed himself because he was not allowed to share in the plot against King Alexander and Queen Draga. He had the same idea of "honor," probably, that led a young German officer recently to lay violent hands upon himself after he had been treated scornfully by his brother officers for not using his sword on a drunken private who had ventured to "insult his uniform" with some personalities.

Curious Facts About Suicide.—Says *Leslie's Weekly* on this subject: Professor William B. Bailey, of Yale, has brought out some interesting facts based on 29,344 cases of suicide, covering the period from 1897 to 1901. Using the 10,000 unit, he finds that 7,781 males and 2,219 females found life intolerable, and, despairing of mending, ended it. This leaves the ratio of cowardice 3½ to 1 in favor of feminine courage. Almost two-thirds of the suicides occurred between the ages of twenty and fifty. Curiously enough, there are more married than single suicides. While married men are more likely to take the plunge than married women, single, widowed and divorced women are more prone to kill themselves than unattached males. Business losses are more likely to drive people to suicide than ill-health, insanity, disappointment in love, or strong drink. Monday is the favorite day for the rash deed, while few take the step on Saturday. Professor Bailey's explanation is as follows: "For those who have endured throughout the week there is pay-day at hand, followed by a day of rest." Among the males Monday is preeminently a day for suicide. Females prefer Sunday to Monday. Religious excitement may have something to do with this, but nearly a third of the domestic troubles leading to suicide come on Sunday. More than one-fourth of the suicides from financial trouble and ill-health among females occur on Monday. They apparently lack the courage, in their weak or impoverished condition, to take up the struggle of a new week. Of 10,000 cases, 3,687 occurred in the twelve hours before noon. Beginning with midnight, there is a continuous increase until 6 P. M. The three hours from 6 to 9 P.M. show a falling off, while from 9 o'clock till midnight is the period of greatest frequency. Some years ago it was discovered that a large number of suicides wore congress gaiters. Just why was not exactly determined. There are many other curious features that call for comment and explanation.

Fever Crisis Reported to Be Passed.—Statements indicating that the crisis in the yellow fever situation of New Orleans has passed; that the campaign of science is meeting with unbounded success; and that the fever will be practically forgotten by frost, were printed last Friday over the signatures of the leaders in the campaign of eradication—Surgeon White, Presidents Kohnke and Souchon of the Boards of Health, Dr. Beverley Warner, Dr. Metz of Tulane University, and Chairman Janvier of the citizens' committee. Dr. White says: "The work begun by the city Board of Health and continued by the Marine Hospital Service has undoubtedly been effective in holding the infection in check. We may say without undue self-congratulation that the disease is being gradually worked out. It must be apparent, for the lists of cases and deaths, taken on the average, week by week, are growing steadily less." President Schwing, of the Louisiana Press Association, has issued an address to the newspapers of the State inviting a discussion of the question of Federal control of the quarantine, thereby making impossible in the future such conflicts as have occurred in the South this year. Vicksburg and Natchez, which had most stringent restrictions against infected points, have appealed to the Marine Hospital Service for a fumigation system in order to enable them to move goods. Two cases of fever have been reported at Pearlington, Miss., an important lumber point at the mouth of the Pearl River. Leading citizens have met here and formed the New Orleans Health Association, a permanent organization, with Charles Janvier as president. The new association will endeavor to further the establishment and equipment of a permanent isolation hospital, where fever cases will be taken, as they are at Havana, immediately after they enter this port. So strong is the sentiment in favor of the early completion of the water, sewage and drainage work, that plans are now being considered for an appeal to the Legislature to provide the money necessary for additional speed in construction.

Missouri Valley Medical Society.—This society held its annual meeting in Council Bluffs, Ia., on Thursday and Friday, August 24 and 25, with an attendance of one hundred. Dr. S. Grover Burnett, in his presidential address entitled "Oslerism Bearded; or, A Study of Age in Relation to Work," called attention to the fact that Dr. Geo. M. Beard was entitled to priority in suggesting the uselessness of man above forty years of age. Dr. Beard claims that those who have done their best thinking before forty do their best mental externalizing afterward. Beard has shown us that 70 per cent. of life's work is done by the forty-fifth year, and 80 per cent. is finished by the fiftieth year. Also that only 25 per cent. more actual work is accomplished from thirty to forty years of age than is done between forty and fifty years of age; thus, man's retirement at forty would mean a loss to the world of a sum equal to three-fourths of his work done from thirty to forty years of age, to say nothing of the auxiliary unfinished business accumulated before forty and requiring concentrated experience which comes after forty, to shape it into a thing of value. The last half of man's life is unquestionably the best and most favorable part of it; especially if he devotes the first half to thought. Faddism is the product of immature sentiment, which age and experience and careful investigation will always cure. Papers were read by Drs. Le Roy Crummer, A. C. Stokes, W. O. Bridges, A. P. Condon and J. P. Lord, of Omaha; Fenton B. Turck and W. F. Waugh, of Chicago; Daniel Morton, of St. Joseph; J. W. Kime, of Fort Dodge, Ia.; Herman E. Pearse and C. B. Hardin, of Kansas City; T. N. Bogart, of Excelsior Springs, Mo. On Thursday evening the society was entertained by the local profession at Lake Manawa. An amendment to the constitution was read, changing the annual meeting to the first week in September. The secretary's report showed a healthy condition of the society, 41 new members having been added during the year. The Buchanan County Medical Society extended an invitation to hold the next

semi-annual meeting in St. Joseph, in March, 1906, which was accepted. The election of officers for the ensuing year resulted as follows: President, Dr. John E. Summers, Jr., of Omaha; First Vice-President, Dr. C. H. Dewitt, of Glenwood, Ia.; Second Vice-President, Dr. C. B. Hardin, of Kansas City, Mo.; Treasurer, Dr. Donald Macrae, of Council Bluffs, reelected; Secretary, Dr. Chas. Wood Fassett, of St. Joseph, Mo., reelected.

Cumberland Valley Medical Association.—The doctors of Maryland and Pennsylvania, comprising the entire Cumberland Valley, met last week in annual convention at Mt. Holly Park. There was an attendance of about eighty. Dr. V. M. Reichard, of Maryland, presided and read an eloquent and scholarly address upon "The Position of the Medical Profession at the Present Day." The convention was opened with a cordial address by Major James Evelyn Pilcher, in which, on behalf of Cumberland County, he extended the heartiest of welcomes and placed the keys of Old Mother Cumberland at the disposition of the association. Dr. J. B. McCreary described the wonderful Shippensburg case of transposition of the internal organs, which has been referred to several times in the newspapers, and which is a unique case in medical annals. Dr. Charles F. Palmer, of Chambersburg, read an interesting paper upon "Our Relations to the World at Large," and Major Pilcher presented a memoir upon the "Medical Lessons of the Far East," in which he illustrated, by the success of the Japanese operations, the importance of state medicine and of the active participation in public affairs by physicians. It was one of the best papers ever read before the society. The scientific work of the day closed with a paper upon "The Influence of Eye Strain," by Dr. A. C. Maisch, of Hagerstown, Md. The meeting was then adjourned to the Holly Inn where at three o'clock a largely attended and elegant banquet was served, in the course of which delightful music was furnished by an orchestra composed of the daughters of Dr. W. T. Phillipy, of Carlisle. Major James Evelyn Pilcher was toastmaster and presided in his usual happy vein, while responses were given to the following toasts: "The Medical Man's Vacation," by Dr. J. Bruce McCreary, of Shippensburg; "The Terrapin and the Doctor," by Dr. Robert W. Ramsey, of Chambersburg; "The Ladies," by Dr. H. C. Devilbiss, of Chambersburg; "The Revised Code," by Dr. L. H. Keller, of Hagerstown; "Surgery in the Country," by Dr. V. M. Reichard, of Fairplay, Md.; "The Triumphs of Medicine," by Dr. J. B. Amberson, of Waynesboro; and "The Home Guard," by Dr. Harry A. Spangler, of Carlisle. The following officers were reported and unanimously elected for the coming year: President, Major James Evelyn Pilcher, of Carlisle; First Vice-President, Dr. H. P. F. Unger, of Mercersburg; Second Vice-President, Dr. A. C. Maisch, of Hagerstown; Third Vice-President, Dr. George C. Borst, of Newville; Secretary, Dr. J. J. Coffman, of Scotland; Assistant Secretaries, Drs. P. R. Koons, of Mechanicsburg; H. C. Devilbiss, of Chambersburg; T. C. R. Miller, of Mason-Dixon; Treasurer, Dr. J. J. Koser, of Shippensburg.

Fight Against Lead Poisons.—The International Labor Office of Basel (Switzerland), which was organized four years ago by the International Association for Labor Legislation, has invited an international competition for the prevention of lead poisoning, and offers a number of valuable prizes for treatises on this subject. This association was founded by persons advocating the legal protection of workmen, among whom were prominent statesmen and scholars of Europe. Sections of the association have been formed in the following countries: Austria, Belgium, France, Germany, Great Britain, Hungary, Italy, Netherlands and Switzerland. The International Labor Office is subsidized by the Governments of the following countries: United States, Belgium, France, Germany, Hungary, Italy, Luxemburg, Netherlands, Sweden and Switzerland. According to its rules the International Labor Office has to serve as a scientific organ and it has been entrusted with the task of preparing and publishing a bulletin, containing an account of all the new laws concerning the hygiene and safety of the working classes, including parliamentary reports, as well as discussions and resolutions of congresses, concerning the legal protection of labor. I.—The prizes offered are as follows: (1.) One prize of $1,200 for the best treatise on the prevention of lead poisoning in the operation of mining and milling lead ores or ores containing lead. (2.) One prize of $2,400 for the best treatise on the prevention of lead poisoning in smelting and refining works. (3.) Two prizes, viz.: One first of $600; one second of $360, for the best treatises on the prevention of lead poisoning in the chemical application of lead, as in white lead works, manufacture of other lead paints, of electric accumulators (storage batteries), etc. (4.) Four prizes, viz.: One of $360; one of $240; two of $180 each, for the best treatises on the prevention of lead poisoning in the trades of house, ship, coach-painting, interior decoration, varnishing and the like. (5.) Four prizes, viz.: One of $360; one of $240; two of $180 each, for the best treatises on the prevention of lead poisoning in those trades where raw and manufactured lead are consumed or handled on a large scale, as in type foundries and printing-offices. II.—Each treatise to contain a systematic review of the special causes giving rise to lead poisoning, in conjunction with a description of the various processes of manufacture, pointing out the dangers occasioned at every phase of procedure, including handling and transportation. Reference to be made also to the causes due to working at places in which a prolonged occupation is liable to affect the health, to want of cleanliness, lack of proper guidance and instructions, carelessness, poor and inadequate food, irrational way of living and unhealthy dwellings of the workmen. In connection with the statement of the causes of lead poisoning, measures for their prevention are to be proposed. III.—Substantial evidence should be given for the proposed preventives as regards their technical, hygienic and economical feasibility. IV.—The comparative injuriousness of the different phases of manufacture as well as of the conditions referred to in section II. must be demonstrated as far as possible by a properly graduated classification of the risk of lead poisoning, from the highest to the lowest degree. V.—In proposing new installations or alterations of the existing mode of operation, the probable increase or decrease of expenses incurred by the change should be approximately stated—*e. g.*, in proposing mechanical appliances to supersede manual labor the primary cost of these, as well as the increase of working expenses by depreciation, and interest on the capital invested would have to appear, as well as the saving of wages or other factors of economy—viz., the avoidance of fluctuations and changes in the working staff and, in consequence, the maintenance of a properly trained crew with a corresponding improvement of their capacity. VI.—It is desired that the treatises should promote the development of the present provisions of the various States by outlining or drafting legal or administrative regulations or suggestions to the proper authorities, aiming at the realization of the preventive measures proposed by the competitors. Short precepts against the danger of poisoning might also be given, preferably in a form

suited for posting in workshops, building grounds, etc. VII.—A clear and concise summary of the measures proposed by the competitors is to be given at the end of the treatise. VIII.—The papers may be written either in English, French or German. Already printed books cannot be taken into consideration by the jury. The ready manuscripts must be put in an envelope bearing only a motto, and lodged with the International Labor Office at Basel on or before the 31st December, 1905. The full name and address of the author should be stated under a separate sealed cover bearing on its outside the same motto as above. Contributions arriving later than the 31st December, 1905, will be excluded from the competition. IX.—By the award of a prize the International Labor Office is entitled to publish a treatise, leaving, however, its author the exclusive property; the office may also concede to the authors the right of publishing their treatises. Manuscripts which are not secured for publication will be returned to their authors. X.—In case the jury should not see fit to award the total sum of $6,480 reserved for the prizes, the remainder shall be employed upon recommendation of the jury by the International Association of Labor Legislation, for other purposes concerning the hygienic welfare of the working classes. All letters, inquiries and other matters pertaining to the present competition, are to be addressed to the International Labor Office, at Basel (Switzerland).

OBITUARY.

DR. SIEGFRIED MARTUS, of New York, a specialist in skin diseases, who had been connected with the staff at the Mount Sinai Hospital for fourteen years, died last Thursday, at the New York Hospital, from an operation for appendicitis. He was ill only a few days. He was born in Russia in 1862, and after receiving his education at Posen and in the University of Berlin came to this country. He was one of the experts in the X-ray department at Mount Sinai, medical adviser of the Hebrew Technical Institute, a member of the County Medical Society, the German Medical Society and several other organizations.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Regular Meeting, held May 22, 1905.

Treatment of Diarrhea in Children.—The scientific business of the evening consisted of a discussion of the summer diarrheas of children, which was begun by Dr. Joseph E. Winters, of New York, and participated in by prominent pediatrists from many cities. Dr. Winters said, in opening the discussion, that there is a confusion of terms with regar' to summer diarrhea which sometimes makes this affection include dysentery. Diarrhea, however, never becomes dysentery, and never leads up to dysentery. Dysentery is a specific infectious disease. Both diseases may coexist in the same subject or diarrhea may so weaken an infant as to leave it open to attack by dysentery, but the diseases are absolutely distinct. The necessity for a review of notions with regard to treatment can be best realized from the fact that while there were about 2,700 deaths in Greater New York during the summer of 1903 from diarrhea, there were over 3,800 in 1904. Last summer was a more cool and salubrious season than that of 1903, and should naturally have been associated with a lessened instead of an increased mortality. This throws a shadow over science, and seems to indicate its hopelessness in the face of this serious condition.

Food Disorder.—Summer diarrhea is purely a food disorder, and is eminently preventable, yet it registers more deaths than any of the infections. It is evident there has been a gross mismanagement of the diet of infants in Greater New York. Barley water, rice water, egg water, and the like, has been substituted for milk in the feeding of infants till weakness and collapse have ensued with fatal termination. The first step in the treatment of diarrhea of infants must be the removal of the cause. This means that all irritant materials must be kept out of the dietary before the child falls sick, and then, after the illness has begun, they must be removed from the intestinal tract.

Necessity for Purgation.—In the folds of the intestinal tract curds of milk, the seeds of fruit, and other irritating material catch and excite inflammation. These must be removed before the irritative inflammation will subside. The best purgative is castor oil, given ice cold, and repeated if it is rejected after an hour. The only reason for the giving of opium must be not to stop the diarrhea, but to release the spasm which keeps the irritative material in certain parts of the digestive tract and causes this to surrender all septic matter. Any further source of irritation must be avoided, and consequently for twenty-four hours the infant must receive only water. Feeding during diarrhea is fatal; in young infants hot water, given by the bottle, will often relieve their discomfort. If there is temperature, cold water should be given, which will help to lower the temperature. Hot water, if given fifteen-drop doses on the tongue every hour, or oftener if necessary, checks vomiting when nothing else will accomplish that purpose.

Treatment of Convalescence.—If at the end of twenty-four hours the diarrhea has ceased, and there is no more vomiting, the patient may be given weaker food. Barley water and peptonized food should not be given to young children. They are eminently unphysiological. Proteid excess is fatal in the summer. On the other hand, the use of pernicious dextrinized cereals cannot but do harm. Milk is the only food resource in children under one year of age. For children under three months of age, the upper ounce of the cream of a quart bottle of milk which has stood for sixteen hours, kept on ice all the time, should be added to an ounce of water, and two tablespoonfuls of lime water. One ounce of this mixture may be given every four hours. Filtered, unboiled water should be used, and if at the end of twenty-four hours the child continues to improve, then an ounce of this food may be given every two hours.

Abuse of Water.—There was a time not so long since, when, if children did not take their food properly, they were not likely to obtain the amount of liquid necessary for their subsistence. Then came the realization of the necessity for water occasionally. Now there has come a tendency to exaggerate in this matter. Water, if given too frequently, especially on a weakened stomach, is not carried out of the stomach, and is apt to produce irritation and atony of that organ. Water should not be given oftener than every three hours, so as to enable the stomach to pass it on to the intestines, as no water is absorbed in the stomach itself.

Death-Rate in Older Children.—The anomalous death-rate of infants from diarrhea last summer was due to the unjustifiable use of cereals at a time when

nature had not supplied the digestive juices necessary for the proper preparation of such material. In older children the increase in the death-rate was due to the excessive use of animal broths. These are destitute of constructive elements, and are only stimulants. Beef juice should be interdicted whenever the stools become offensive, and whenever the nervous system is overstimulated by them. Vegetable proteids should be employed. Cereals check waste, and are indispensable in the second year of life. Gruels made with water and butter and salt are of excellent service, but should not be made with milk. Animal broths should not be administered at the same time with them, nor immediately after them.

Choice of Cereals.—The best cereals are, in their order, barley, imperial granum, rice, arrowroot, and then the others. Imperial granum and arrowroot should be cooked for three hours. Rice, as a rule, does not need to be cooked so long, neither does barley. If the child refuses to take the cereal food, then this should not be forced upon it. Hunger will usually compel the child to take food at the proper time during the second year, and as in adult life the disinclination for food is respected, so it should be in these children, whose feelings can be trusted to assert themselves. There need be no fear of the child allowing itself to become too weak for want of food, provided, always, that the food is nicely prepared and offered to it.

Chronic Diarrhea and Condensed Milk.—In chronic diarrhea Dr. Winters has obtained the best results by the use of condensed milk. He has found it hard to understand just why this has proved so beneficial. It is a matter of very definite experience, however, and the condensed milk regimen has not failed him once in years. Sometimes the effects produced seem almost miraculous. It is often hard after the child gets well to keep the mother from continuing the use of the kind of food that has proved so helpful. A change, however, must be made after a time, otherwise there will inevitably develop scurvy, or rachitis, or some of the deforming types of malnutrition. Gradually and surreptitiously cream must be added to the child's feedings of condensed milk, until finally it is all replaced by cream and milk.

Abuse of Irrigation.—Dr. Winters considers that irrigation of the bowels is a much-abused and overrated remedy, and an overused method of treatment. It produces distention, adds to the patient's discomfort, increases the congestion, and is sure to be harmful rather than helpful if repeated frequently. A small enema may be given to help the castor oil, but more than this should not be employed. In the variations of remedies much harm has been done, and new methods of treatment must not be adopted lightly, nor before proper realization of their possible effect.

Infant Feeding.—Dr. Arthur B. Meigs, of Philadelphia, said that the question of infant feeding had been a puzzle until the solution by imitation of human milk as early as possible had been reached. For ill children, dilution of the usual diet is the important feature of treatment. The idea of substituting a cereal for milk can scarcely be entertained during the first months of life, for it is poor in nutriment value, because of the lack of digestive power, and is likely to lead to disturbance. For older children the use of a cereal is admirable. In this matter it must not be forgotten that the old-fashioned flour ball is excellent, though in recent years neglect of this method has been the rule. Milk is the only complete food for children, and should not be withdrawn from the food. Its use is the sheet anchor in all diarrhea, but it must be so diluted as not to prove a source of irritation, and must be in such a state of purity as not to add further microbic disturbers already in the intestines. Dr. Meigs dreads the use of a purgative in case of children's diarrhea, and considers that admirable judgment is needed lest the purgative effect is overdone. Not infrequent it happens that an entirely wrong effect is produced by the use of purgatives.

Starvation Treatment.—Dr. William H. Wells, of Philadelphia, said that the first indication in the treatment of diarrhea must be that there shall be no food until the acute stage of the affection is past. Absolute abstention from all food must be insisted on as long as there are acute symptoms. Flushing of the bowel with sterilized water or with normal salt solution undoubtedly does good, though usually not more than two or three flushings during the day should be directed. At the beginning of the affection a purgative is of excellent service because it removes irritant material. Castor oil seems the best, but calomel in minute doses produces an excellent effect and has none of the difficulties of administration of castor oil.

Hypodermoclysis.—Dr. Wells is sure that in some cases in which the diarrhea of colliquative form has carried off large amounts of water, and so caused intense prostration, and in which vomiting does not permit the introduction of liquids in the system in the ordinary way, he has saved life by hypodermoclysis. Normal salt solution is employed for this purpose, and is introduced directly beneath the skin. This method is much better than the use of large quantities of fluid by the mouth, which is almost sure to be injurious.

Question of Cereals.—Cereals should not be employed for diet in children under nine months of age. Some children have the faculty for digesting starchy material, but most have not. When the infant is weakened by summer complaint, then the starch digestive faculty is decreased, and the result of giving cereals cannot but be harmful. In Dr. Wells' experience, condensed milk has not proved to be as beneficial for any form of diarrhea, even the chronic variety, as some practitioners claim. When he has found it of use, it was usually the unsweetened variety. It is evident, however, that for the diet of children, no general rules can be laid down, but each child must be treated as an individual, and the reaction of each little patient's system to various forms of food carefully noted.

Cereal Decoction.—Dr. A. D. Blackader, of Montreal, said that it seemed very inadvisable to give cereals to any extent to children under six months of age, since they have a very imperfect digestion for starchy materials. The starchy digestion in the upper digestive tract is very imperfect. The succus entericus helps out in starch digestion in not a few cases, but this is only in the normal health of the child. Irritation increases the digestive juices at first, but later decreases them, and consequently diminishes the hope of starch digestion. There is an increase of fluid in the digestive tract, but this is illusory, and does not contain digestant materials. The use of cereal for diarrhea only gives additional material for fermentation, which further adds to the irritated condition. In Dr. Blackader's experience predigested cereals have not given very favorable results, and pure water or carefully prepared whey

seem the only materials that should be given during the existence of acute symptoms.

Animal Broths.—Dr. Blackader considers that the nutritive value of animal broths is very low. They serve only to stimulate the digestive glands, but when these are already overirritated may serve only to increase the irritation. Dr. Blackader suspects that beef broths may encourage bacterial growth. Laboratory experience would certainly seem to show that beef juice might be expected to have this effect. As a rule the stools are more foul-smelling when beef broth is given, and this would seem to indicate the growth of undesirable bacteria in the intestinal tract.

Child Individual.—Dr. E. M. Buckingham, of Boston, said that in discussions of the illnesses of children sight is frequently lost of the most important fact, namely, that the child is an individual, and must be treated as such. There is no definite formula for mother's milk, but nature provides different kinds of milk for each individual in accordance with the nature of the child and its relation to its mother. It must not be forgotten that the child's muscles and glands are weak. The stomach must not be overloaded, and the digestive glands must not be asked to furnish much material. In making a substitute for mother's milk the modification must be made to suit the individual and not according to a table of figures. The fats, proteids and salts of cow's milk, it has been pointed out, are not of the same chemical constitution as those of mother's milk. Care must be exercised, as far as possible, to make a formula to suit the individual child. Percentages for children should not be prescribed in the ordinary house visit, but should be made out carefully in the office, suggesting only at first a preliminary formula. The most important thing is to remember how much effect even small changes in the food may have on the infant.

Cereals.—These may be given either as food or as drugs. If given as food to young infants, trouble will ensue, since the glands are not developed for their digestion. The pancreas has a ferment that will digest in some children, but this is not always present. When milk is not boiled, cereals may be tried, but with great care, and with a constant feeling that it is better to be sure than to be sorry. Cereals may be used as a drug, in the sense of mechanically breaking up the curd of milk. This is shown by experiments in the test tube, which are extremely crude.

Reason for Different Results Reported.—Different physicians get very different clinical results. There seems to be no doubt that the difference is really in the babies. Those who do not use starch at all in the dietary seem to have more confidence in their results than those who employ it. Undoubtely if milk is good for the well child it should be good for the ill child. Of course, it must be properly diluted for the weakened digestive juices. The fear of the child's starving is overdone. Children can stand lack of food for a considerable period, and it is less of a drain on them to be without food than to be given food that only increases the irritation in their intestines and makes their condition worse. A little brandy occasionally helps the child to stand the period of starvation, yet does not irritate unless it is given in sugar, which is sometimes recommended, but not as the result of experience. At the beginning of an attack of diarrhea the bowels should be emptied once. The best remedy for this is castor oil, and if it is vomited calomel should be employed.

Use of Water.—When there are many dejections, water should be given rather freely, because the fluid is being drained out of the child's system. If there is fever, ice water may be employed with advantage. Not infrequently it happens that there is at first some vomiting of the water, but then it is retained and the child sleeps. There seems to be no indication for lavage. At the beginning a large injection may be employed, but its repetition is likely to do harm. Even more than any remedy the child needs rest, and this must be of mind as well as of body. While it must not be handled or carried, any noise in the room, and especially any talking, is sure to prove a source of annoyance. If there is frequent irritative diarrhea, opium should be employed, and the best form is that of the liquid Dover's powder. The presence of ipecac in this makes it of special service. Once there has been an attack of diarrhea, it must not be forgotten that the child will probably not be able to take ordinary food until after the hot weather is over. If the child suffers from dysentery then irrigation should be freely employed, though in diarrhea this remedy would prove harmful.

Classification of Diarrhea of Infants.—Dr. John Lovett Morse, of Boston, said that he found himself compelled to disagree with much that Dr. Winters had said. For him there are two classes of infantile diarrhea; the one due to bacteria, the other not. Non-bacterial diarrhea may be caused by heat or cold, or by the nervous system, but is not inflammatory. Most of the diarrheas of children, however, are bacterial in origin. There are many different forms of bacteria for causing the disease, and not one specific type. The first requisite in the treatment of diarrhea is pure fresh milk. There are four stages in the treatment. While the irritative material is present a purgative should be given, and the best is castor oil, the next is calomel. If the vomiting is persistent, then the stomach should be washed out. Irrigation of the colon should be employed once, though not more. After purgation comes starvation. This is to be considered, however, as referring only to food, and not to water. At least as much water must be given as the child would ordinarily get in its food. There need be no danger of hurting the child by starvation treatment for forty-eight hours at least, and Dr. Morse has seen absence of food continued for seventy-two hours or longer without serious results. If the starvation treatment could be kept up long enough, the diarrhea could be starved out; but unfortunately the baby dies before this period sometimes. When the readministration of food is begun milk should not invariably be employed, but the food should be chosen according to the indications.

Kinds of Food.—Bacteria grow readily in milk, but there are also forms of bacteria in these cases that grow in carbohydrate. As a rule, if the stools are sour, it is because of the growth of carbohydrate-loving bacteria. If they are foul, then it is because of the presence of bacteria that grow more readily in proteids. If the stools are foul, carbohydrate should be given; for sour stools, the proteids. Barley water really continues the starvation treatment while keeping up the supply of water, and satisfying the child's stomach to a certain extent, as well as the minds of the parents. When diarrhea is persistent the fats in the diet should be kept low. When there are a number of small stools, indicating the presence of ileocolitis, then food containing as little residue as possible, and which is absorbed high up in the intestine, should be employed. For this pur-

pose whey is best. Whenever there is long-continued diarrhea opium may be of service. It should never be given in acute cases, however. Other drugs are not worth mentioning. Irrigation of the bowels has its place when there are a number of stools containing blood, evidently coming from low down in the intestines. Irrigation should be employed not oftener than three times in twenty-four hours. When children are over three months, a small amount of starch may be given, but it must be remembered that such children will digest sugar rather easily. Each case must be treated as an individual, and not as a type of disease.

Infantile Diarrhea in the Country.—Dr. R. C. Newton, of Montclair, N. J., said that there were very few deaths from diarrhea in the country, and this is evidently due to the purer milk as food, and the absence of excitement and noise. The nearer the baby is to the cow, the less danger there is from artificial feeding, showing that it is not so much the unsuitability of the milk from the chemical standpoint as because of the changes that take place in it during transportation, and its retention before feeding, that cause diarrhea. Certainly it does not seem advisable to give starchy foods to young children. Beef juice and soups and broths have a distinct tendency to make the children more nervous than before.

Importance of Early Treatment.—Dr. John Dorning, of New York, said that more can be done for the child in the first twelve hours of a diarrhea than in the next twelve days. Dr. Dorning considers that cereal gruel as a diluent for milk has a distinct place and he is sorry for its condemnation. It serves to break up the milk curd, and makes it more easily digestible. General rules for baby feeding, however, have many exceptions, and the only rule is each baby for itself. Opium is a dangerous drug for children, and the less it is given the better. Subnitrate of bismuth, however, given in doses of five to ten grains every three hours, is undoubtedly of service. At the beginning of a diarrhea one or two irrigations should be given, but not more. Cleanliness, as a rule, is not enough insisted on in these cases, and as a consequence, children become secondarily infected. After the handling of the napkins the hands should be thoroughly washed before the baby's food or clothes are touched.

Dr. Floyd Crandall said that the principle that what is good for the well is good for the ill does not hold in adults in fevers, since no one would think of giving steak and potatoes; why, then, in children? The question of cereals is still open, but there is no question that milk should be stopped at once, though water should be given freely. Dextrinized cereals have proved of service in Dr. Crandall's hands.

Dr. Walter Lester Carr gave a set of statistics in which, in England, artificially-fed children got on better than nursing children. This is evidently one of the anomalies of statistics.

Lime Water in Diarrhea.—In closing the discussion, Dr. Winters said that lime water must be the great standby of the physician in treating children's diarrhea. No one had ever treated children's ailments successfully without administering lime water freely. It breaks up the curd of milk better than does the cereal. The use of lime water in large quantities is one of the things for which the present generation must thank the teachings of Dr. Meigs, of Philadelphia. He it was who first showed that cow's milk was entirely too rich in proteids, and that human milk only contained one per cent. of proteid material. This has since been verified by investigators all over the world. The best way to reduce the proteids in cow's milk is to use lime water freely. Without the addition of one-fourth lime water to cow's milk the baby will not be kept well, nor will it get well when once ill. In baby feeding two things particularly are needed—more attention to the individual baby, and more dependence on clinical experience, rather than on the results of laboratory work. The laboratory has failed over and over again in its suggestions. Experience is a sure guide.

CHICAGO MEDICAL SOCIETY.

Regular Meeting, held April 12, 1905.

SYMPOSIUM ON SURGICAL ANESTHESIA.

Ether or Chloroform.—Dr. H. D. Peterson discussed the choice of ether or chloroform, methods of administration, dangers and after-effects. He said the relative value of these two anesthetics depends upon the safety. Safety is measured by the action of the drug and experience of the anesthetist. Chloroform, being more depressant and toxic, is less safe than ether. Statistics have proven the death-rate to be higher with chloroform than with ether. The choice of anesthetic is to be decided by the condition of the patient and experience of the administrator. There are few contra-indications for ether, more for chloroform. Heart disease, shock, prolonged operations are urged against chloroform. Chloroform is an unsafe anesthetic in the hands of the unskilled. The author recommends the closed method for ether, the open for chloroform. Each should be commenced by slow application. A minimum amount should be added after stage of surgical anesthesia is reached. As to the dangers, they are few if ether is used. Death from ether is usually due to inattention or carelessness of the anesthetist. Warning is always given. Chloroform is sudden in action; little or no warning is given. Close watch of the patient is necessary when chloroform is used. Recovery varies with the dose given. A minimum dose is followed by the quickest recovery. The patient should be watched until conscious enough to clear his own throat of mucus. As to after-effects, vomiting is often prevented by allowing the inhalation of vapor of aromatics, vinegar or acetic acid. Normal saline solution per rectum or by hypodermoclysis aids in the rapid elimination of a general anesthetic.

Spinal Anesthesia.—Dr. A. E. Halstead read a paper on this subject. The objections to the use of spinal cocainization, that are usually made, were stated as follows: (1) That they are immediate and remote dangers, which are considerable. (2) That it is uncertain in its action, both as to producing surgical analgesia and as to its duration. (3) That attempts at introducing cocaine sometimes fail. (4) That unpleasant after-effects result.

Technic.—In all of his cases the technic employed was that followed by Tuffier. The steps are: (1) Preliminary hypodermic of morphine, ¼ gr. (2) Careful preparation of lumbar portion of the back, extending around as far as the middle of the crest of the ilium. (3) Sitting posture, if possible, with the body bent forward in the "scorching position." (4) Recognition of the fourth lumbar spine, which is found drawing a line from the highest point of one iliac crest to the same point on the opposite side. (5) The needle is introduced just below and to one side of the tip of the fourth lumbar spine, and is directed upward, for-

ward and toward the median line for a distance of from 2 to 3½ inches. When the membranes are penetrated a distinct diminution of resistance is noticed. As soon as the needle enters the spinal canal the spinal fluid usually begins to drip from the needle. At first, it may be blood-stained, but soon becomes clear. If, after reaching the canal, no fluid escapes, its flow may be hastened by having the patient cough. A stylet may be passed into the needle to remove any obstruction that might be present.

Surgical Indications for Spinal Cocainization.—In operations upon the lower half of the body, when, from kidney, lung or heart disease, a general anesthetic is dangerous, and where infiltration anesthesia or analgesia from neural injections is not possible, spinal analgesia can be employed. In strangulated hernia or intestinal obstruction from other causes, and perforations, where considerable time may be required, thus contraindicating the use of local anesthesia, spinal cocainization is an ideal method of securing analgesia, first, because the patient remaining conscious is not so likely to drown in fecal vomit; second, because the shock from the puncture is practically *nil*. In traumatic surgery of the lower extremities, the use of spinal cocainization "blocks" the reflexes and eliminates the great risk of shock. In amputations about the hip, when the shock from the operation is generally severe, and often fatal, after cocainization of the cord the amputation may be performed without any change in the pulse rate. In this class of operations if, for good reasons, unconsciousness is essential, as it sometimes is, a small amount of ether and chloroform may be administered to secure this end. The spinal cocainization insures the required analgesia. The author believes spinal analgesia is contraindicated in all cases in hysterical women and young children and in the insane. It should be used only when its action can be explained to the patient, and thus cooperation secured. He does not consider any ordinary heart lesion a contraindication to its use. It goes without saying that any marked idiosyncrasy for cocaine should constitute a positive contraindication against spinal analgesia.

Nitrous Oxide Anesthesia.—Dr. Weller Van Hook stated that the thoughtful surgeon, who in the course of each year must anesthetize many human beings, is obliged to contemplate with growing horror the inevitable death list of those whose taking off is due solely in his effort to abolish consciousness for a few minutes. Although death takes place from the administration of the major anesthetics in only one case in 3,500 to 14,000 or 15,000, even this proportion becomes after a while oppressively great and forces the operator to seek new and safer methods. He did not hesitate to say that one of the very greatest needs of surgery at the present moment is to find a simple method of temporarily abolishing consciousness at once practical and devoid of evil consequences. Of the principal anesthetics, nitrous oxide and ether are admittedly the safest, and their combination has long been regarded as valuable and comparatively free from danger. No modern hospital is complete in its equipment without apparatus for administering nitrous oxide gas. It is not necessary to detail the multitude of uses to which its brief anesthesia can be put. Inasmuch as gas alone produces a lethal asphyxia in from three to five minutes, oxygen must be utilized when cyanosis becames pronounced. The addition of about ten per cent. of pure oxygen makes it possible to continue anesthesia with nitrous oxide gas a comparatively long time without much risk. Unfortunately the combination makes necessary a complicated and bulky apparatus. Furthermore, the use of the two gases is rather difficult until the anesthetizer by practice has become expert. This difficulty renders it next to impossible to entrust to hospital assistants, whose term of anesthetic service is necessarily brief, so complicated a duty. If, however, oxygen is admitted to the mask with air from time to time as it is needed, the apparatus demanded can be simplified to a practical point. The apparatus which the writer uses for this purpose is the ordinary dental outfit, the face-piece being that of Harrington. The portability and convenience of the steel bottles containing the liquefied gas and the inhaling apparatus leave but little to be desired in hospital practice. Instead of the 250-gallon bottles used in institutional work, a 100-gallon bottle weighing approximately nine pounds can be used in private practice. It was many years ago that the idea was conceived of using nitrous oxide to abolish consciousness, followed by ether to maintain that state. It was easily discovered that if air is admitted to the mask after nitrous oxide anesthesia has been induced, the patient will recover consciousness to such a degree that the ether anesthesia can be inaugurated only with difficulty, the patient often struggling violently. The ideal way of changing from one to the other of these anesthetics is by gradually adding ether vapor to the inhaled gas. Various complicated apparatus have been invented for this purpose. They are cumbersome, delicate, difficult to manipulate or fragile. In order to render practical the use of these anesthetics in combination, the writer has had made a simple cap to contain a piece of gauze saturated with ether which can be applied to the nitrous oxide apparatus at the moment of making the change, so that no air will be admitted to the mask until after the patient has inhaled the desired amount of ether. With this apparatus, the writer and his associates have anesthetized many hundred patients with satisfactory results. The combination of nitrous oxide with ether is recommended to all as a comparatively safe, rapid and comfortable method of inducing anesthesia.

Dr. Emil Ries discussed scopolamine-morphine anesthesia, and Dr. William E. Schroeder nerve blocking and cocaine-adrenalin-anesthesia.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.[2]

Laboratory of clinical pathology, Cornell University Medical College, May 24, 1905.

Vice-President, Edward K. Dunham, in the Chair.

Members Present.—Atkinson, Auer, Brooks, Burton-Opitz, Crampton, Davenport[2], Dunham, Emerson, Ewing, Field, Flexner, Gies, Herter, Levene, Levin, Lusk, Meltzer, Mendell[2], Morgan, Noguchi, Norris, Oertel, Opie, Richards, Salant, Sweet, Torrey, Wallace, Wolf.

Members Elected.—Joseph Erlanger, Otto Folin, E. O. Jordan.

ABSTRACTS OF REPORTS OF ORIGINAL INVESTIGATIONS.

Contributions to the Study of Sulphur. I. The Metabolism in Brombenzol Poisoning.—By W. Mackim Marriott and C. G. L. Wolf.—Baumann and his pupils investigated the effect of the administration of the halogen derivatives of the hydrocarbons, and found that one of the results in the disturbance which followed was the elimination of halogen aromatic mercapturic acids, which he regarded as derivatives of cystin. Later,

[1] Proceedings reported by the Secretary, William J. Gies, Ph.D., of New York. The authors of the communications have written the abstracts. The Secretary has made a few abbreviations.

[2] Non-resident member.

Friedmann investigated these compounds and was able to confirm Baumann's view. The mercapturic acids are derivatives of cystëin, the reduction product of cystin.

This study is a part of an investigation of cystinuria, the view, which has been advanced by previous observers, being taken that the process in brombenzol poisoning is an experimental cystinuria. Dogs were used in these experiments, and were fed on a uniform diet. The animals were catheterized once a day. Analyses of the urine, as complete as possible, were made. The feces were examined for nitrogen and fats.

During the period of administration of the brombenzol the nitrogen and urea were somewhat increased. The urea followed the total nitrogen closely. The preformed ammonia remained at a level below that of the fore period. The kreatinin estimations did not give results of any distinctness.

The investigation of the partition of sulphur led to the result that while the total sulphur excretion was not increased during the experiment, there was almost complete suppression of the alkali sulphates. The excretion of neutral sulphur, represented for the most part in this case by parabromphenylmercapturic acid, was increased 400 per cent. The curves representing the alkali and neutral sulphur were antipodes. The ethereal sulphates rose markedly during the feeding period. In one experiment it was shown that during the first two days of the administration, the total sulphur excretion remained constant while the total sulphate-sulphur fell rapidly. This period is being made the subject of closer study.

The chlorin and phosphorus excretion remained practically constant during the experiment. There was increased nitrogen and fat elimination in the feces.

On section, the animals showed ulceration of stomach and intestines. Microscopically, the liver and kidneys were markedly degenerated. The investigation is being continued.

On Experimentally Produced Variations in the Energy of Tumor Growth.—By Leo Loeb (Presented by James Ewing).—Inoculations of different tumors (sarcomas of the thyroid, mixed tumor of the submaxillary gland) through several or many generations have shown that, under the influence of experimental conditions, the energy of the tumor growth varies in a definite way. The rate of growth is relatively slow in the animal originally affected with the tumor; after the inoculation into the first generation, there is a certain latent period, after which the tumor begins to grow. The growth of the first generation is more rapid than it has been in the original animal. After the inoculation into the second generation, the latent period is abbreviated, in some cases more, in others less, and the succeeding growth is likewise more rapid than the growth in the original animal, or in the first generation. From now on, a further shortening of the latent period, or an increase in the rapidity of tumor growth, does not take place in the succeeding generations. Duration of the latent period and rapidity of growth may remain stationary through many generations, or the energy of the tumor growth may even somewhat decline.

These facts permit the conclusion that transplantation of a tumor has a tendency at first to increase the energy of tumor growth and that this increase may be cumulative. That this increase does not continue in succeeding generations may perhaps be explained by the existence of counteracting influences, the actual existence of which can be demonstrated as shall be shown later.

The energy of tumor growth can be increased directly and not only indirectly, merely by removal of the tension of the surrounding capsule or by better conditions of nourishment. Such a direct stimulating effect of the wound upon the cell growth causes probably a phenomenon not infrequently observed by surgeons, namely, the increase of malignancy in recurrent tumors. It is also possible to diminish the energy of tumor growth. In the course of tumor inoculations it not rarely happens that certain tumors remain stationary or even retrogress apparently spontaneously. This is especially found in the course of later inoculations and it probably indicates that after many inoculations one or several of the factors determining a vigorous tumor growth become gradually weakened. In such cases one can observe that even a long time after the expansive growth of such a tumor piece has ceased, many mitoses are present in the cells of the stationary or retrogressive tumor.

It is possible to diminish the virulence of tumor cells directly by subjecting them to certain physical or chemical conditions. By heating tumor cells up to 43° or 44° C. for half an hour outside the body, or by leaving them before inoculation, in glycerine from twelve to twenty-four hours, and washing them afterwards in .85 per cent. sodium chloride solution or by keeping them one or two days in N/700 KCN solution, before transplantation, we are able to diminish considerably the energy of the succeeding tumor growth and to increase the period of latency . In the author's recent tumor inoculations of a salivary tumor, a similar action of glycerine in increasing the period of latency was found to occur. Frequently such tumors remain stationary after a short preceding period of growth. In the first experiments of this kind in rat tumors, it was found that a temperature of 45° C. during half an hour kills the tumor cells. Jensen found a similar sensitiveness in his mouse tumors. Sticker's lymposarcoma could be heated up to 45° C. without being killed. The power of resistance of different varieties of tumor cells varies somewhat therefore and the means to be adopted to obtain a diminished virulence in the growth of an inoculated tumor will vary accordingly. In this connection, it might be mentioned that these facts may perhaps find a practical application in so far as pieces of tumor previously subjected to such treatment might be used to procure active immunity against tumor growth. That such active immunity is possible, at least in the case of certain tumors, is especially indicated by the observations of Sticker.

If we now wish to analyze the cause of this decrease in the rate of the growth of tumor cells we have to consider several possibilities. It might be that the physical or chemical means employed kill most of the cells and leave only a few cells alive able to give origin to the developing tumor. Two facts speak against such an interpretation. In the case of any tumor transplantation, the growth starts from a relatively small number of cells, in so far as the central part of the transplanted piece becomes necrotic. In his first series of tumor transplantations the author obtained well growing tumors, after injecting a cystic tumor fluid into rats. In such cases one or very few cells must have given rise to the tumor growth, and these tumors developed in a few cases quite rapidly. Such an explanation is therefore probable. Further, we would have to consider the possiblity that the means employed to decrease the virulence of tumor cells are favorable to the growth of bacteria and that they inhibit in this way the development of tumors. It is certain that bacterial toxins frequently act unfavorably upon the growth of tumors. Against this explanation, however, the objection can be raised that tumors with experimentally diminished virulence did not show any signs of putrefaction, nor did they, after inoculation, cause a formation of abcesses, occurrences which are frequent after transplantation of infected material. It

is, therefore, most likely that the cause of this decrease in virulence is the result of the direct decrease in the vitality of the tumor cells as expressed in their energy of growth. It is, however, desirable to further analyze these facts in future experimental work on tumors, especially as the character of such work of necessity limits the number of experiments a single observer can make. With this restriction it may be stated that the observations here recorded point to the conclusion that it is possible to cause an experimental increase or decrease in the energy of tumor growth, and that these variations may be caused by direct stimulating or depressing influence upon the tumor cells and that such a stimulation effect may be cumulative.

Demonstration: Photographs and Plumage-charts of Hybrid Poultry, with Remarks. Charles B. Davenport exhibited photographs and plumage-charts of four hybrids between different races of poultry, and also of their parents, and remarked on the nature of the inheritance illustrated by each example.

Experimental Cirrhosis of the Liver.—By Richard M. Pearce.—Presented by Eugene L. Opie. The experimental studies upon which this communication is based were suggested by an investigation of the necrosis produced in the liver of the dog as the result of injecting hemolytic immune sera of high hemagglutinative power (*Journal of Medical Research*, 1904, xii, 329). These necrotic lesions, which are due apparently to an obstruction of the circulation by thrombi composed of fused red blood corpuscles, vary in position and extent according to the dose of serum administered. Small doses cause more or less isolated lesions which may occupy any portion of the lobule; large doses produce a diffuse necrosis which spares only the tissue about the larger portal spaces. The uniformity of this necrotic lesion suggested the importance of a study of the repair process which would naturally follow in animals recovering from the acute toxic effects of the injected serum. The extent of the destruction precluded complete regeneration of liver parenchyma and if the defect was repaired by connective tissue proliferation, the resulting histological picture would be, except for a difference in the relation between the new tissue and the remainder of the lobule, analagous to cirrhosis in man.

Methods.—Dogs were injected either in the smaller branches of the femoral vein, or in the abdominal cavity, with serum obtained from rabbits which had received repeated injections of red blood corpuscles of the dog. The dose usually employed was 1 cubic centimeter of serum to 500-800 grams of body weight and the animals were killed at intervals varying from 48 hours to 36 days.

Results.—A majority of the animals die after intervals varying from 4 minutes to 48 hours. In those surviving, hemoglobinuria was a constant phenomenon usually appearing within 18 to 24 hours, persisting 3 to 4 days, and followed for several days by the presence of bile pigment in the urine. The first evidence of repair was mitosis of the liver cells lying at a slight distance from the necrotic areas. The earliest period at which this was seen was 38 hours after injection. At 48 hours the proliferation of endothelial and connective tissue cells was evident and this increased so rapidly that by the fifth day the necrotic tissue was largely replaced by young granulation tissue in the midst of which dividing liver cells could be found in considerable number. The young tissue later assumes a more fibrous apppearance, the new blood vessels become prominent, and newly formed bile ducts appear in the midst of the stroma. A development of liver cells from these new bile ducts is readily demonstrated. Multinucleated liver cells containing four to twelve nuclei are very abundant in the late stages. An interesting phenomenon is the engloblng and removal of the hyaline remains of necrotic liver cells by large multinucleated masses of protoplasm. These giant cells, essentially foreign body giant cells, are derived in part from endothelial cells, but may have all the characteristics of true hepatic cells and are, he is convinced, multinucleated liver cells with phagocytic properties. The oldest lesion obtained (36th day) presented an appearance analogous in histological structure to early cirrhosis as seen in man, differing only in that the new connective tissue surrounded the islands of liver tissue persisting about the portal spaces, instead of having a distinctly perilobular arrangement. Macroscopically, this liver was much firmer than normal, deeply bile stained and had a finely granular surface. Thus we have a form of experimental cirrhosis affecting the liver in a diffuse but uniform manner, and more typical than any previously described in the literature.

The observations thus briefly outlined, while of importance in explaining the histogenesis of cirrhosis, and incidentally of various processes of repair in liver tissue, do not aid in the elucidation of the etiology of cirrhosis in man, nor do they explain the peculiar arrangement of the connective tissue in human cirrhosis. They demonstrate, on the other hand, however, that cirrhosis may follow extensive primary destructive lesions, a view not yet fully accepted, and thus support the contention of Kretz that cirrhosis is essentially the result of a series of repair processes following repeated injuries of liver parenchyma. The earlier lesions closely resemble acute yellow atrophy of the liver in man and are, the author believes, of considerable importance in explaining the pathogenesis of this process.

Experimental Arteriosclerosis.—By Richard M. Pearce and E. McD. Stanton. (Presented by J. E. Sweet.)—Within the past two years several French and German writers (Josué, Erb and others) have described under the various name of calcification, atheroma or arteriosclerosis, a lesion of the aorta of rabbits produced by the intravenous injection of adrenalin. These experiments have been repeated for the purpose of making detailed histological studies and in the hope of throwing some light upon the histogenesis of arteriosclerosis in man.

Methods.—Rabbits have received injections of 1-1000 solution of adrenalin in the ear vein. An initial dose of 3 minims repeated every other day has been the usual procedure. In other instances the dose has been gradually raised until a dose of 20 to 25 minims was given every day. The animals have been killed after periods varying from a few days to 8 weeks.

Results.—The vascular lesions produced are limited to the aorta and exhibit a more or less definite sequence. Rabbits receiving 5 to 6 injections show no gross lesions, but histologically important changes in the media are evident. These consist of focal areas of degeneration in which the muscle fibres are destroyed without alteration of the elastica. Later the degeneration is more extensive and involves the greater portion of the middle zone of the media. At this time changes in the elastic tissue appear; the fibers become swollen, stain irregularly and in some places appear to be fused together. Special stains show a small number of minute fat droplets in such areas. After 12 to 15 injections very definite lesions are evident macroscopically. The aorta is more or less distorted in shape, rigid and non-elastic. Irregular dilatations alternate with elevated brittle areas of calcification. Distinct atheroma with ulceration is seldom seen. In the experiments continued for six to

eight weeks the process becomes very diffuse and small dilatations of the thinner portions of the aorta assume the appearance of aneurisms. At this stage the destruction of the elastic fibers is extreme and all degenerated areas are infiltrated with lime salts. Cellular infiltration and repair about such areas has been seen in a few instances and experiments are now under way to determine the frequency and extent of this reparative process. The changes in other organs include enlargement of the heart, edema and congestion of the lungs, and degenerative changes in the liver and kidney, and occasionally in the heart and other muscles. Whether the vascular changes are due to a primary toxic action of the adrenalin or whether they are the result of the increased arterial tension which it causes, cannot be determined from these experiments. This question of etiology must be settled by other methods of investigation. The chief value of the studies herein briefly summarized lies in the application of this comparatively simple series of changes to the more complicated vascular lesions occurring in the arteriosclerosis of man.

On the Chemical and Physiological Properties of Ricin, with Demonstrations.—By Thomas B. Osborne and Lafayette B. Mendel.—A chemical study of the castor bean has indicated that this seed contains proteins of the same character as the other oil seeds which have been examined, namely, (1) a considerable quantity of a globulin which can be obtained in octahedral crystals; (2) a much smaller quantity of an albumin, coagulating at about 66° to 70° C, the temperature at which it separates depending to a large extent on the rate of the heating and other conditions; (3) proteoses which appear to belong to several of the newly recognized groups of this class of substances. The satisfactory separation of the various types of proteids was accomplished largely by the use of fractional salt precipitation and dialysis. The toxic constituent of the castor bean has been investigated under Kobert's guidance by Stillmark, who applied the name *ricin* to proteid material which he separated. The product which Stillmark regarded as relatively pure must have been a mixture of proteids and have contained only a small proportion of the toxic compound. Cushny made a more careful study of ricin and obtained a substance of sufficient toxicity to produce death in animals with a dose of 0.04 milligram per kilo of body weight. He regarded the toxic compound as proteid in nature. Among subsequent investigators Jacoby has denied the proteid character of ricin. He digested his toxic preparations with trypsin and obtained solutions which retained their toxicity although apparently no longer giving proteid reactions. Brieger, however, failed to prepare toxic preparations free from proteid material.

The efforts of the authors have been directed especially to the possibility of isolating the toxic constituent of the castor bean and determining its chemical nature. The toxic action has been found to be associated wholly with the preparations containing the coagulable protein and never with those free from the albumin already mentioned. The toxicity of the products consisting chiefly of this albumin was extremely great, the most active preparation proving fatal when administered subcutaneously to rabbits in the small dose of 0.0005 milligram per kilo of body weight. Each sample of ricin prepared by the authors showed characteristic agglutinating properties in its behavior towards blood erythocytes, in marked degree; and the pathological findings after intoxication were typical. The other proteins of the seed are devoid of the properties noted for ricin, thus demonstrating the applicability of the methods of separation employed. The toxicity of the active preparations is proportional to their content of coagulable albumin, the purest specimens containing, as their analysis shows, little else than proteid. Thus far their determinations have shown that this ricin prepared by the authors does not differ from ordinary proteins in composition, heat coagulation, color reactions, precipitation reactions, specific rotation, or in the state of combination of its notrogen. By tryptic digestion the agglutinating power of pure ricin may be greatly impaired or destroyed. The experience of the authors lends no encouragement to the attempts to "purify" such toxins by methods designed to eliminate proteid substances from the active materials.

On a Method of Determining Indol, with Demonstrations.—C. A. Herter and M. Louise Foster. The method described by the authors constitutes a rapid and accurate means of determining indol. It is based on the fact that indol, in slightly alkaline solution, readily condenses with naphthoquinon sodium mono-sulphonate, and forms a blue crystalline compound which is only very slightly soluble in water and is readily extracted by chloroform from a watery solution or suspension. The condensation compound results from the union of two molecules of indol with one of the naphthoquinon sulphonate. The union does not occur as in the case of compounds with amins, with the elimination of the sulphonic acid group, but occurs between one of the carbonyl groups of the napthoquinon compound and the imid group of the indol. The new compound is therefore a diindyl-naphthoketone mono-sulphonate. The solubility of this substance in chloroform is about one part in 4,000 of the solvent, and is sufficiently great to permit a rapid and thorough extraction of the substance. Chloroform containing the diindyl compound has red color, very like that of hemoglobin. Owing to this circumstance, the condensation compound in chloroform can be approximated colorimetrically in a convenient manner by comparing the tint of the solution with that of the orange-red glass scale of the Fleischl hemoglobinometer. Where more accurate results are desired the chloroform is evaporated and the residue of the diindyl compound weighed. It was found that the method here indicated serves for the recovery of a very large percentage of indol from peptone solutions or bouillon. From solutions containing a little proteid the indol may be recovered almost quantitatively. The presence of a large proportion of proteid may cause the retention of considerable indol. The distillation should be carried on directly, without steam, from the acidified fluid. The presence of indol in a small fraction of distillate is best ascertained by boiling the acid solution with a few drops of a 2 per cent. alcohol solution of dimethylamidobenzaldehyde. Skatol forms an homologous and similar compound with naphthoquinon, but the substance is violet rather than blue.

Anesthesia Produced by Magnesium Salts. A Preliminary Communication with Demonstrations.—By S. J. Meltzer and John Auer. The authors exhibited to the society two guinea-pigs which were deeply narcotized by injections of magnesium sulphate. One of these animals had been similarly narcotized twice before, and fully recovered each time. In their physiological and toxicological studies of magnesium salts the authors found that by subcutaneous injections of certain quantities of sulphate or chlorid of magnesium, animals can be brought into a state of deep anesthesia, during which any operation can be performed upon them without the least resistance. If the dose of the salts is not too large heartbeat, blood pressure and respiration remain nearly normal. It was tested on dogs, cats, rabbits, guinea-pigs, white rats and frogs. A grain and a half of magnesium

sulphate is about the effective dose for most of the animals. The chlorid has to be used in smaller doses in proportion to its smaller molecular weight. Particulars will be reported later. The authors wish to emphasize the fact that these salts are very poisonous when certain maximum doses are exceeded.

Enzymes and Anti-enzymes of Inflammatory Exudates.—By Eugene L. Opie. Exudates obtained by injecting suspensions of aleuronat into the pleural cavities of dogs and rabbits were subjected to autolysis. The Kjeldahl method was used to determine the nitrogen of coagulable proteids converted by digestion into soluble form. Inflammatory exudates removed one or two days after injection of the irritant undergo very little change, while those removed three or more days after the onset of inflammation exhibit appreciable though slight autolysis. There is no relation between the amount of digestion and the number of cells which are present. If the cells all separated by centrifugalization from the serum and suspended in normal salt solution well marked autolysis is demonstrable. By recombining cells and serum it can be shown that the serum inhibits this autolysis. When this inhibitory action is prevented by heating the serum to 100° C leucocytes acting upon the coagulated serum cause very active digestion. In the following summary nitrogen of uncoagulable substances is represented by cubic centimeters of 1-10N. sulphuric acid; 5 cc. suspension of cells at 37° C., 5 days 9.3° cc.; control, 3.60; 5 cc. serum, 7.25; 5 cc. cells +5 cc. serum at 37° C., 5 days, 10.95; control, 10.85; 5 cc. cells+5 cc. coagulated serum at 37° C., 5 days, 23.1; control, 10.85.

The anti-enzymotic action of the serum is unaffected by a temperature of 65° C., but is destroyed at 75° C. The proteolytic ferments of the leucocytes act both in an acid and in an alkaline medium, but are most efficient in the latter. The anti-enzymotic action of the serum is favored by an alkaline reaction, but is completely lost in an acid medium. The serum of the exudate contains a proteolytic ferment which is active only in an acid medium. These facts are illustrated by the following summary of an experiment in which 5 cc. of a suspension of cells with serum, cells with heated serum and serum alone were kept at 37° C. for a period of five days.

The anti-enzymotic power exhibited by the serum of the inflammatory exudate is possessed by the serum of the blood, from which it doubtless passes into the exudate. In the later stages of inflammation produced by aleuronat, and in exudates caused by bacteria, there is some diminution of the anti-enzymotic action.

Shallow Well Waters of Brooklyn.—By James P. Atkinson. Many streets of Brooklyn are without a public water supply and a sewage system. The residents of these streets are therefore dependent upon wells for their water supply, and upon privy vaults and cesspools to receive the sewage and waste water of their homes. The soil is uniformly sandy and water may be had by driving a pipe or digging a few feet below the surface. The water so obtained is to a certain extent surface water. The underground water is necessarily influenced by the sea water. This influence is very marked in some instances, as is shown by the high chlorin content, accompanied by the low contents of other constituents which could indicate sewage contamination. The following tables present average analytic data regarding condemned shallow wells, also regarding wells considered to be of a suspicious quality and wells which are passed as being of fair quality. Very few of the latter class were considered to be of good quality, and some might have possibly been classed as suspicious upon their high nitrate contents considered with the proximity of the sources of contamination.

The highest and lowest figures which enter into the averages are also given. These figures do not represent any particular analyses, but are selected from the different analyses from which the averages are made. Table D gives the average data for deep wells that supply water for manufacturing purposes, and they may be used as a standard in judging the purity of wells whose waters are used for domestic purposes.

Tables giving averages and high and low figures of analyses of 438 shallow wells in Brooklyn, N. Y., which are used for domestic purposes, and a table of deep wells used for manufacturing purposes. The figures represent parts in 100,000.

A—82 CONTAMINATED WELL WATERS.

	Cl.	NO_2	NO_3	Free NH_3	Alb. NH_3	Distance from source of contamination.
A	4.64	.0018	.70	.0236	.0045	47 ft.
L	.70	.0001	.30	Trace	.0004	10 "
H	9.00	.0100	3.60	.4900	.0400	150 "

B—59 SUSPICIOUS WELL WATERS.

A	5.33	.0006	.634	.0057	.0035	45 ft.
L	.80	.0004	Trace	Trace	Trace	20 "
H	32.00	.0025	2.400	.0875	.0180	75 "

C—297 UNCONTAMINATED WELL WATERS.

A	2.94	Trace	.582	.0026	.0031	43 ft.
L	.40	None	Trace	Trace	Trace	10 "
H	12.10	.0003	3.600	.0190	.0270	100 "

D—14 UNCONTAMINATED DEEP WELL WATERS FOR BREWERY AND FACTORY USE.

A	5.60	Trace	.300	.0010	.0020	.....
L	.80	None	.040	Trace	Trace	.....
H	17.00	.0002	.400	.0065	.0030	.....

A = Average figure. L = Lowest figure used in average. H = Highest figure used in average.

67.9 per cent. were considered to be of gocd quality. 13.4 per cent. were found to be of suspicious quality. 18.7 per cent were considered to be contaminated and unfit for domestic purposes.

It was found impossible, as a rule, to use the figures for chlorin and ammonia contents of these Brooklyn waters in judging their purity. The nitrates might give some clue to the condition, but it was mainly upon the nitrites that one had to depend. There was in each case of condemnation ample chance of pollution through privy or cesspool, and in many cases other sources such as stables for horses and cows, pig sties, chicken yards, etc. When the nitrites were as high as .0010 parts per 100,000 the water was condemned. When the nitrites ranged between .0003 and .0010 parts per 100,000 the water was considered to be of suspicious quality, and warning was given to boil before using for domestic purposes. In Brooklyn and Queens there are waters of known purity which show nitrites as high as .0003 parts per 100,000. Therefore, when nitrites amounting to .0003 parts per 100,000 were found, with other constituents of the water suitably low, such waters were passed as fit for domestic purposes.

It will be noticed in comparing the average figures of tables A, B and C that nitrite decreases with ammonia, and that the figures for nitrate are about the same in each table. The average chlorin in table C is much lower than in tables A and B, while the average depth of the wells and their average distance from the sources of contamination are about the

same. The nitrogen averages of table C approach those of table D. If one takes the nitrogen figures of the deep wells as a standard, the conclusion may be drawn (a) that the sandy soil of Brooklyn cannot be relied upon as a safe filter; (b) that Brooklyn soil, so far as the author's evidence goes, seems to be nearing the saturation point with sewage; and (c) that, consequently, these shallow wells are in growing danger of pollution.

The Influence of the External Temperature upon the Viscosity of the Blood.—By Russell Burton-Opitz. It was proved by a series of determinations that the viscosity of the "living" blood can be greatly influenced by changing the temperature of the surrounding medium. The viscosity was markedly increased if the dogs, used in the experiments, were immersed in water at 25° C. Warm water baths (42° to 45° C.) produced a corresponding decrease in the viscosity. The specific gravity of the blood was changed in a corresponding manner.

The Changes in the Viscosity of the Blood During Narcosis.—By Russell Burton-Opitz. Determinations of the viscosity of the "living" blood were made during deep and light ether and chloroform narcosis. It was found that the viscosity is increased by deep and lessened during light narcosis. The specific gravity of the blood also shows regular variations. It is increased by deep and lessened by light ether narcosis. Chloroform, on the other hand, produces a slight decrease during deep and an increase during light narcosis. Hence, the specific gravity cannot be regarded as an accurate index of the viscosity.

Studies of the Effects of Radium on Plants and Animals, with Demonstrations.—Communicated by William J. Gies. The various studies of radium included in this communication and which are still in progress were carried out at the writer's suggestion and under his general direction. They were made possible by the generosity of Mr. Hugo Lieber, who gave the writer an abundant supply of radium preparations for each series of experiments. Professor William Hallock also encouraged the work by permitting the use of some of his valuable preparations. Dr. G. B. Pegram has given advice freely on physical matters connected with radio-activty. The studies included in this plan were the following:*

Preliminary Notes on the Effects of Radium Rays on Plants.— By C. Stuart Gager, of the New York Botanical Garden. The radium has been employed in several forms and degrees of activity from 10,000 to 1,500,000. Experiments, so far, indicate that the effect is the same in kind, whether the plants are stimulated with gamma rays only, or with alpha and beta rays as well. When all three kinds of rays are employed, the effect, within the same time, seems to be increased. The results already obtained justify the following statements:

The rays of radium act as a stimulus to plants. For this stimulus there are minimum, optimum and maximum points, depending upon the proximity of the radium to the plant, the strength, quantity and condition of the radium salt, the time of exposure, and the nature and condition of the tissue.

The early stages of seed germination are accelerated, if stimulation ranges between the minimum and optimum points; otherwise they are retarded. Seeds are less sensitive to the rays when dry than when soaked. When seeds are stimulated *during* germination, subsequent growth is retarded; but radium rays acting through soil in which plants are growing accelerate both germination and subsequent growth of the shoot.

The growth of plants is retarded in an atmosphere of decaying radium emanations, such as may be drawn from tubes lined with Lieber's "radium coating."[1] Development of leguminous tubercles is retarded when a glass tube of radium bromide (10,000 activity) is in the soil. Experiments to obtain radiotropic response have so far given negative results. Alcoholic fermentation is accelerated by radium rays.

Chloroplasts, under the influence of the rays, change their position in the cell, as when exposed to too intense sunlight. Plastids are soon overstimulated, and their activity completely inhibited, causing etiolation and other attendant effects. Gemmæ of *Lunularia*, exposed for six days, failed to develop thalli. Meristem (embryonic tissue) of the hypocotyl is destroyed by prolonged exposure to the rays.

The Action of Radium Rays on Amœba Proteus and upon Other Microorganisms.—By Louis Hussak, of the Laboratory of Zoology, Columbia University, and the American Museum of Natural History. These experiments were intended primarily to show the influence, if any, of radium rays on the protoplasm of *Amœba proteus*. Other microorganisms (*Vorticella, Paramœcium*, etc.) were also subjects of experiment. Radium bromid preparations of 600, 1,000 10,000, and 1,500,000 activity (in thin glass tubes) were used and several celluloid rods covered with Lieber's "radium coatings" of 10,000 to 25,000 activity were also employed. The radium contained was held in the water within from 1 to 3 mm. of the organism under observation. Under these conditions no visible effects were produced, by even the strongest radium preparations, during periods of observation of about an hour. The water surrounding the animal may have prevented radiant effects.

The Effects of Intravenous Injections of Radium Bromid.—By Russell Burton-Opitz and G. M. Meyer, of the Physiological Laboratory, Columbia University. These experiments, dealing principally with the effects of radium bromid upon the circulation and respiration, were performed upon dogs weighing from four to five kilograms. Light ether-narcosis was employed. The solutions injected contained 1.8 mg. of radium bromid per cubic centimeter of distilled water. Preparations of radium bromid of 240, 1,000 and 10,000 activity were used. The facial vein was selected for the injections. The results were of a very uniform character, whether radium bromid of a high or low activity was employed. The injection was always followed, after a latent period of about five seconds, by a gradual and well-marked increase in blood pressure, this rise evidently being caused by general vaso-constriction. Soon, however, a marked decrease in the frequency of the heart, accompanied by a pronounced irregularity, causes a fall in pressure. Contractions in which the diastolic phase is extremely conspicuous interchange with a series of forcible preeminently systolic beats. It need hardly be mentioned that under these conditions the variations in blood pressure are extreme. These effects of radium occur also after both vagi have been divided. These

*Each of the collaborators has written the report of his own share of the investigation.

1 Proceedings of this society, December 21, 1904.

circulatory changes are accompanied by a gradual decrease in the frequency of respiration, terminating finally in complete respiratory paralysis. This effect precedes the total inhibition of the heart.

Much more rapid and precise effects were obtained with radium bromid of high activity (10,000) than with that of lower activity. In general, 0.5 mg. of the 10,000 activity (per kilo of body weight) sufficed to produce as decided an effect as 5.0 mgs. of the 240 activity (per kilo of body weight).

Practically all preparations of radium salts contain barium. In order to check the effects of such impurities, the authors carried out a number of comparative experiments with pure barium bromid. It was found that the effects of radium bromid preparations of low activity (240 and 1,000 activity) differ only quantitatively from those of barium bromid. Certain amounts of such radium preparations produce effects that can be obtained only by correspondingly larger amounts of barium bromid. The influence of barium in causing pronounced irregularity of the heart is not evidenced by the preparations of radium bromid of 10,000 activity; only a decided inhibition results, which is accompanied by a decided rise in blood pressure.

The Radio-activity of the Different Organs after Injections of Radium Bromid.—By Gustave M. Meyer, of the Laboratories of Physiological Chemistry and Physics, Columbia University. The radio-activity of the different organs of dogs experimented upon was determined by two methods. For an approximate estimation of the radio-activity, gold-leaf electroscope has been found very serviceable. In this case, it is only necessary to thoroughly dry the finely divided organ and note the rapidity with which the charged gold leaf descends. The use of the quadrant electrometer admits of a more exact valuation of the radio-activity. The organ is incinerated and the radio-activity of the ash determined. The determinations thus far made have been entirely upon the dogs used in the experiments of Opitz and Meyer[1]. The following parts have been examined: blood, liver, lungs, kidneys, spleen, pancreas, brain and muscle. Of these the blood showed the greatest activity, while the brain has so far given negative results.

The Influence of Radium Bromid on Metabolism in Dogs.—By William N. Berg and William H. Welker, of the Laboratory of Physiological Chemistry, Columbia University. The experiments are being carried out on dogs in nitrogenous equilibrium. Radium bromid preparations of 240, 1,000 and 10,000 activity have been employed. Thus far introduction has been by mouth only. One animal (6.6 kilos) has been fed 1.100 gram 240 activity, 0.250 gram 1,000 activity and 0.125 gram 10,000 activity in small amounts daily (during twelve days) without the appearance of any gross symptoms except diarrhea during the period of the administration of the preparation of 240 activity with its large content of barium. Proteid metabolism did not appear to be materially affected. Total sulphate (SO_4) in the urine was markedly increased, especially during the period following the administration of the preparation of highest activity, and when diarrhea as well as constipation was entirely absent.

In control experiments with barium bromid, much larger quantities per os (as much as 0.5 gram daily to a dog weighing only 4.5 kilos) were without any gross symptoms whatever. In the case of barium, also, proteid metabolism was practically unaffected by the quantities used. The quantity of total sulphate in the urine, unlike the result with radium, appeared to be practically unaffected by the barium bromid.

Other determinations are being made and injection experiments are in progress.

[1] Injections as well as feeding experiments are in progress.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held June 14, 1905.

The President, James M. Anders, M.D., in the Chair.

Exhibition of Cases of Goiter; Suprapubic Cystotomy for Calculus; Entero-Anastomosis for Cancer of the Cecum; Perforated Gastric Ulcer; Posterior Gastro-Enterostomy for Ulcer; Gastro-Enterostomy for Carcinoma.—Dr. William L. Rodman presented these cases. The first was that of a young woman, aged twenty-two years, who had suffered for a few years from dyspnea, difficulty in swallowing and some evidence of congestion about the brain from pressure on the vessels of the neck of a large tumor. Operation was attended with but slight hemorrhage, and she left the hospital within a week. The second case was that of an elderly man in whom operation was successfully performed. The X-rays failed to reveal the stone. The patient in the third case made a perfect recovery. Numerous cancerous growths were present in the cecum. At the time of operation the symptoms of obstruction were complete, and the patient had vomited feces for a day. Radical operation was out of the question, and an entero-anastomosis of a distended ileum was made. The fourth case, a young man of twenty-two, had had ill-defined symptoms of dyspepsia for a year or two, but without the classical symptoms of ulcer. A few hours after seizure with profound colic and shock he was operated upon, and an ulcer was found on the anterior wall of the pylorus. An opening in the ulcer had been closed by omentum, and there had not been at the time a great amount of extravasation. Notwithstanding the development of a severe peritonitis, recovery ensued. The point of special interest was the absence of symptoms pointing to gastric ulcer, and the occurrence of rupture in connection with a latent ulcer.

In the fifth case diagnosis of gastric ulcer had been made some months previous, but operation was deferred until the condition of the kidneys was improved. Two old ulcers at the pylorus were found, one on the anterior and one on the posterior wall. An increase of from ten to fifteen pounds in weight, and the disappearance of all gastric symptoms, were the results of the operation. The sixth patient was a man aged fifty-five years, whose first dyspeptic symptoms appeared in September last. At that time he weighed 190 pounds. Six weeks ago his weight was 117 pounds. Opening of the abdomen revealed a large amount of carcinomatous material. Anastomosis was made by direct suture, eliminating the loop. There has been absolute relief of symptoms with a gain of 25 pounds in weight.

Fractures of the Head of the Radius; Report of Two Cases.—Dr. T. Turner Thomas contributed a very carefully prepared paper upon this subject, and exhibited numerous specimens, the result of his experimental study. He stated that vertical fracture of the head of the radius, chipping off a portion of the radial rim, is both atypical and

frequent fracture. Since it is always intracapsular, limitation of motion must always be expected during the healing process and for a variable period afterward. Non-union is rare, due to the admirable splinting effect of the orbicular ligament and the resulting close approximation of the fragments. For the same reason, Dr. Thomas believed that crepitus, deformity and mobility of the fragments on each other were usually absent, both fragments rotating together within the ligament. In the first case reported, the diagnosis was made by skiagraph; in the second, from the localized symptoms and the marked limitation of motion, especially of pronation and supination. In the first case, in which fracture occurred nearly two years ago, return of function was almost perfect, lacking only to a slight degree full extension. The second case, after about four months, lacks only in extension.

Dr. Thomas stated his belief that fractures of the neck of the radius were also much more common than has been supposed, and almost always associated with fracture of the head and impaction of the shaft into it. Both varieties of fracture, he thought, were almost always due to falls on the hand.

Dr. George E. Pfahler believed that the character of fracture under discussion was more frequent than generally suspected, and referred to ten cases he had seen in a series of 500 fractures. He did not think that an error need often be made in finding the fractures by radiodiagnosis.

Dr. M. K. Kassabian called attention to some lantern slides of the fracture. He has found less difficulty in taking skiagraphs of the fracture than intimated by Dr. Thomas. The technic has been so improved that there is shown not only the shadow of bone, but the structure, with any accompanying disturbance. Epiphyseal separation of the head of the radius, he stated, was often mistaken for fracture.

Dr. John B. Roberts considered Dr. Thomas' contribution of much interest, and asked that the experimental fractures be presented to the Mütter Museum.

Dr. L. J. Hammond suggested that experimental fractures would not take place under conditions present in the living subject. He did not regard fractures about the joints as serious as he had been taught to believe, and did not hesitate to leave a fracture of the elbow joint immobilized for three or four weeks, after that removing the dressing every day or two. With this method and the employment of passive motion, he has not seen loss of joint motion in simple fracture. The skiagraphs did not seem to him valuable as working principles to the surgeon inexperienced in X-ray work.

Dr. Thomas, in closing, referred to the liability of error in diagnosis by skiagraphy, but also recalled cases in which diagnosis of fracture of the head of the radius was only made by this method. He expressed his willingness to place the fractures in the Mütter Museum, and in regard to Dr. Hammond's suggestion, he pointed out that in experimental work the fracture occurred always at the same point, where the joint was weak, and that this was also true of the living subject.

Perineal Prostatectomy Performed with the Aid of Young's Tractor.—Dr. Moses Behrend, after a short review of the history of prostatectomy in general, reported the history of his case operated by the perineal route according to Young's method. The patient was seventy-five years of age, and made a good recovery. Age was considered not to be a contraindication of operation. He believed that the percentage of cures far exceeded the failures, that, though the prostatic urethra may be destroyed, the normal function returns. He concluded that sounds were not necessary, but advisable, and that the mortality was remarkably low when the type of case was considered.

Cervical Rib with Resulting Gangrene of the Fingers.—Dr. W. Wayne Babcock emphasized the importance of searching for a cervical rib in cases of paresthesia, anesthesia or persistent ischemia involving the hand, arm or shoulder, and reported a case in which circulatory changes first noticed at thirteen progressed until gangrene of the fingers resulted at the age of twenty. At the age of twenty-two the patient suffered pain of an unendurable character, which prompted him to seek operative relief for what was supposed to be severe frostbite. Excision of the rib was followed by a rapid amelioration of the pain and a more gradual return of the radial pulse.

BOOK REVIEWS.

OPERATIVE SURGERY. By JOSEPH D. BRYANT, M.D., Professor of the Principles and Practice of Surgery, Operative and Clinical Surgery, University and Bellevue Medical College; Visiting Surgeon to Bellevue and St. Vincent's Hospitals; Consulting Surgeon to the Hospital for Ruptured and Crippled, Woman's Hospital, and Manhattan State Hospital for the Insane; former Surgeon-General of N. G. N. Y.; etc. Fourth edition. D. Appleton & Company, New York and London.

IN the year 1886 the first edition of Bryant's Operative Surgery appeared, and immediately won universal recognition as a work of the highest authenticity and validity. Since that time it has run through many issues and has undergone three revisions, a fact which sufficiently speaks for its great popularity and wide distribution.

It is to be noted that the present fourth edition has been carefully gone over, numerous passages have been rewritten, much new matter has been added, new illustrations included and the old ones perfected, all of which goes to bring the work as completely abreast modern surgical attainment as is possible in a text book.

Dr. Bryant has the power of expression whereby he is able to set down facts in few words, and yet with such directness of thought that the reader comprehends the meaning clearly without strain or difficulty. Although his surgical training has been of the broadest, he is not content with presenting a book of personal experience alone, but incorporates in his work all the diverse opinions and procedures now in use.

The work as formerly embraces two volumes. The first volume is devoted to general surgical principles; operations upon the blood vessels, nerves, fibrous structures, muscles and bones; amputation; deformities; plastic surgery, and operations upon the mouth, pharynx, nose, oesophagus and neck.

It is difficult to detect from a volume of such uniform strength a section of paramount value, but all things considered the chapter on plastic surgery perhaps deserves this distinction. Certainly a more instructive and comprehensive statement of the subject can not be found; and this field, as is well recognized, is one which taxes most severely the ingenuity and proficiency of surgeons lest their efforts prove a deadly boomerang.

The second volume is almost entirely devoted to visceral surgery, which after all is chiefly considered by general surgeons. Here the highest authorities are fluently quoted and the final choice of operation, as generally indicated, is backed by the logical conclusions and experienced judgment of the author. This part of the work is unusually broad, even encyclopedic in its scope, but is at no time verbose.

Throughout the work the necessary surgical anatomy is copiously supplied, being largely incorporated in the general considerations, which tend to illuminate its natural dryness and show the practical application, thus stimulating a more ready memory.

A feature of the illustrative portion is the disclosure collectively of the generally employed instruments for the various types of operative technic.

A clear idea of this masterly contribution for the general advancement of surgical science can be derived only from a long and intimate acquaintance. It needs no further commendation than that in its present edition it will still maintain that position in the forefront of the most valued surgical literature which it has so long held.

The American Year-Book of Medicine and Surgery, 1903. Volume—Surgery. Edited by George M. Gould, M.D. W. B. Saunders & Company, Philadelphia and London.

The American Year-Book Surgery for 1905 follows closely the general characteristics of its predecessors in this series. The editors have attempted to present abstracts from all of the reported work of the past year, which, in their judgment, was either sufficiently meritorious or sufficiently interesting.

So much of the genuinely sicentific and practical has been accomplished that it has been necessary to carry condensation to the extreme, a fact which at times conspicuously interferes with the clarity of the treatment of the subject. This is especially noticeable in the references to the ingenious work of McGraw and Maury relative to intestinal anastomosis by means of ligaturing.

The absolute futility of a perfect hand sterilization by means of the numerous methods now in use, and there are almost as many as there are surgeons, is shown by the conclusions derived from the exhaustive work of Ludham-Green. This should be read and thoroughly digested by all those who consider rubber gloves an unnecessary evil.

For general excellence of detail, symptomatology, operative indications, and post-operative managament, the chapter upon appendicitis is perhaps the most complete in the volume. Also, the chapter devoted to hernia is authoritative and deserves comment.

It is to be noted with pleasure that the true therapeutic availability of the Roentgen ray and of radium is thoroughly discussed. This article should assist to counteract the promiscuous, unintelligent and often unwarranted administration of these two very much overrated agencies to a trusting but uninformed public by whom they are largely regarded with something akin to superstitious awe.

Much interest will be manifested in the new field opened up through the study of syncytiolysis, by which a better knowledge relative to fetal nutrition has been gained, and which may give a clearer understanding of the etiology of eclampsia.

Throughout the book many new operative methods are described, which no doubt will prove of certain usefulness.

The general utility of the volume can not thus be fully shown. Suffice it to say that it presents the easiest, most ready and authentic means of keeping in touch with the rapid advances accomplished in the surgical field.

Chemical and Microscopical Diagnosis. By Dr. Francis Carter Wood. D. Appleton & Company, New York.

During the past few years developments from the study of clinical microscopy have gone forward with such rapidity that the medical profession at large has experienced difficulty in keeping abreast.

In this volume the author has presented his subject clearly and ably, emphasizing the laboratory methods which are of practical value, and of which every student of medicine should be cognizant. To those procedures the ultimate practicability and clinical merit of which yet remains to be proven he devotes sufficient space to delineate the facts according to the face value of our present day knowledge.

The arangement of the book is admirable. The first division has to do with the study of the blood, the text of which is enhanced by numerous and beautiful illustrative plates—especially to be noted are those showing the malarial cycle which have been stained by means of the author's modified chromatin stain. The chapter dealing with serum reactions is of especial interest. Following this, in order, are taken up the diagnostic features as presented by the study of the Gastric Contents, Feces, Animal Parasites, Sputum, Urine, Transudates and Exudates and Milk, to all of which sufficient space is devoted for an authoritative discussion. Finally, the author briefly reviews, in an appendix, the preparation of the various staining fluids.

One of the most commendable features of the book is the excellent halftone microphotographic reproductions which compose the majority of the many illustrations.

It may be said without reserve that this is one of the best works on diagnosis by an American author, and not only will be a valuable text-book for students but it will be welcomed as a library reference by every practitioner of medicine.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Des Grossesses Tubaires Meconnues. By Dr. Henri Bazalgette. 8vo, 191 pages. Vigot Frères, Paris.

Transactions of the American Pediatric Society. Sixteenth Session. Volume XVI. 8vo, 296 pages. Illustrated.

Diseases of Metabolism and Nutrition. By Dr. Carl von Noorden. 8vo, 86 pages. E. B. Treat & Co., New York.

The Crux of Pastoral Medicine. By Rev. Andrew Klarmannn. 12mo, 164 pages. Fr. Pustet & Co., New York and Cincinnati.

Progressive Medicine. Edited by H. A. Hare. Vol. II, June, 1905. 8vo, 346 pages. Lea Brothers & Co., Philadelphia and New York.

Clinical Diagnosis and Urinalysis. By Dr. J. R. Arneill. 8vo, 244 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

A Text-Book of Medical Practice. Edited by Dr. Wm. Bain. 8vo, 1,011 pages. Illustrations. Longmans, Green & Co., New York, London and Bombay.